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A. V. ZAPOROZHETS
A SOVIET DEVELOPMENTAL PSYCHOLOGIST

BY

MALL VEER

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A. V. Zaporozhets, a Soviet Developmental Psychologist" submitted by Mall Veer in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

A. V. Zaporozhets' special field is the developmental study of three to seven year old children, primarily in areas of thinking, perception, the development of voluntary movements, and educational psychology.

Zaporozhets' writings reflect several currents in Soviet psychology. This leads one to the conclusion that Soviet psychology is not a homogeneous psychological school, but constitutes several positions, the most prominent of which are the Vygotskian, Pavlovian, and Uznadzian. Zaporozhets' writings reflect only a passing contact with Uznadze's set theory. For approximately a decade Pavlovian principles and terms were used in Zaporozhets' writings. Considering the subsequent decrease of Pavlovian terminology in Zaporozhets' works, and that other Soviet psychologists underwent a similar phase at the same time, one is led to suppose that the temporary Pavlovian uniformity in Soviet psychology was due to some external factors.

Zaporozhets' work reflects in the first place the influence of L. S. Vygotski, who formulated psychological principles in agreement with standpoints of a dialectic philosophy. The developmental outlook which characterizes

all Zaporozhets' studies is closely connected with a Hegelian and Marxist concept of existence as a dynamic process of constant growth through the impetus of inner contradictions and as a sum total of mutual interactions. Vygotskian is also Zaporozhets' emphasis on social factors of development and on the qualitative difference between physical and psychological phenomena.

Though Zaporozhets' ideas reflect an interdependence between psychology and philosophy, Zaporozhets himself is not a philosopher. From his works emerges a picture of a psychologist who is inspired in his research by a great personal interest in small children and a deep understanding of them. Zaporozhets' humanistic and developmental approach to children has many similarities to that of J. Piaget.

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PREFACE

The purpose of this study is to achieve a close-up view of Soviet psychological research by selecting the work of an individual Soviet psychologist as a sample and studying this sample in detail.

The work of A. V. Zaporozhets was chosen as such a sample for several reasons. Zaporozhets belongs to the group of Moscow psychologists among whom were the original formulators of a Marxist psychology. Thus it was expected that a study of Zaporozhets would enable us to discover characteristically Soviet trends in Zaporozhets' writing. Zaporozhets' special field of research is pre-school child psychology, which, until recently, has been one of the major research areas of Soviet psychology. Not only has much research been done in this field in the Soviet Union, but the interest in pre-school child psychology is closely connected with the type of thinking characteristic of a great part of Soviet psychologists, namely developmental thinking. In Zaporozhets' writings one can find an example of consistent developmental, or, to use the Russian term, genetic thinking. Zaporozhets has remained a developmental psychologist even when research has led him into other areas besides child psychology. It was also expected that Zaporozhets' writings would reflect trends of other Soviet

psychological schools, as those of Pavlov and Uznadze, besides those of the Moscow school. Moreover, Zaporozhets belongs to a generation of Soviet psychologists who have been in contact with both the earliest and the most recent Soviet psychologists. Thus it was hoped to discern in Zaporozhets' work various cross-influences, and also to follow the development of certain basic ideas. Last, and not least, Zaporozhets being a contemporary psychologist, his writings are available with relative ease. Thirty-six of Zaporozhets' fifty-four publications were obtained in original form; most of the other writings were referred to or summarized by Zaporozhets in his later publications; only four of Zaporozhets' writings remained unobtainable by the writer of this study.

The initial intention was to analyze Zaporozhets' work in isolation from the work of other Soviet psychologists. But this proved to be impossible. The work of Soviet psychologists is so closely interconnected that the work of an individual psychologist becomes fully meaningful only against the background of the work of a whole group of psychologists. Initially it was also intended to avoid any involvement in ideological problems and to be concerned solely with psychological research. This, likewise, proved to be impossible. There is nearly no

field of psychological research in the Soviet Union which is not permeated with an ideological bias. While one may assume that there is some ideological bias at the basis of psychological ideas expressed anywhere, in the Soviet Union the ideological foundation of psychology is overtly stated. This does not mean that there are not, besides the officially stated ideology, other ideological undercurrents in the thinking of Soviet psychologists. But it means that in analyzing Soviet psychological views one cannot ignore their philosophical substructure. Also one cannot ignore the background of historical events. Whereas in North America, where only gradual social changes have occurred, one can adopt the convention that psychological ideas have developed in a historical vacuum, in the Soviet Union the rapid social and political changes have had a direct impact on psychology.

Due to all these considerations it became necessary to precede the analysis of Zaporozhets' writings by a lengthy introduction. The first part of the present study gives a brief overview of pre-revolutionary Russian psychological thinking and research; of post-revolutionary Soviet psychological trends; of the basic principles of Soviet psychology as formulated by the Moscow group of psychologists; of the influence of L. S. Vygotski on the work of this group; of later changes in Soviet psychological work caused by direct interference by political authorities;

and of the recent revival and development of Soviet psychology. A short summary of Soviet psychological research methods is also given in the first part. In the second part of the study an analysis of Zaporozhets' writings is presented. The first part of the study is not a mere introduction, but intended to be an integral part of the whole. While the summary of the development of Soviet psychology is meant to lead to a better understanding of Zaporozhets' work, the analysis of his writings should, in its turn, help us to understand the general development of Soviet psychology. Thus the two parts should balance each other and it is hoped that this study would provide a glimpse into a total process, of which Zaporozhets' work and ideas are an inseparable part.

PART I

DEVELOPMENT OF RUSSIAN PSYCHOLOGY

EARLY RUSSIAN PSYCHOLOGICAL THOUGHT

TENTH TO SIXTEENTH CENTURY

There are two views among contemporary Soviet psychologists concerning the beginnings of Russian psychology. One standpoint is expressed by A. V. Zaporozhets. He states that Russian psychology "had from the beginning a strong materialistic tendency" derived from the nineteenth century revolutionary democrats and physiologists who "laid the foundation for a materialistic conception of the ontogenesis of the human mind" (Zaporozhets, 1964b, p. 672).

Zaporozhets' view is shared by many Soviet and Western psychologists. Older histories of psychology published in the United States limit themselves to mentioning only Pavlov and Bekhterev, adding sometimes Sechenov (Murphy, 1930; Roback, 1961). More recent books discuss besides the influence of Pavlov and Sechenov on Soviet psychology also the influence of Marxist theory (Wolman, 1960). These influences, undoubtedly, are very important.

But recently in some Soviet disciplines, such as psychology, philosophy, and education, a new trend has appeared. Namely the trend to search for the beginnings of these disciplines in a more distant Russian past. Thus the Pedagogical Encyclopedia (1965, II) describes the educational views of early eighteenth century authors, such as Cantemir

and Lomonosov (1965, II). And the *Philosophical Encyclopedia* goes back as far as to the influence of Byzantine seventh and eighth century theologians on Russian thought (1962 II, p. 304).

M. V. Sokolov, a Soviet historian of psychology, states: "Studying the past of Russian psychology . . . one cannot avoid the conclusion that contemporary psychological thinking developed in the soil of our old traditions and its roots lead into the depth of centuries" (1963, p. 5). He further states that "the appearance in Russia of writings which raised, and somehow solved, psychological problems is connected with the introduction of Christianity in the tenth century" (*Ibid*). Sokolov dutifully interpolates a remark that Christianity was a "tyranny of the mind," but goes on finding similarities between medieval Christian ideas and contemporary Soviet ones. Sokolov explains that the greatest merit of Christianity was bringing Russia into contact with the foremost civilization of those days, the Byzantine, and introducing also the thinking of classical Greece, particularly that of Plato and Aristotle (*Ibid*, pp. 6-16).

Sokolov starts his list of the literature which influenced Russian psychological thinking with the Russian translation of the "Dialectica" by John of Damascus, a seventh century Byzantine Father of the Church. Next he lists writings by John, Exarch of Bulgaria (tenth century),

various collections of sayings and writings of Christian and classical authors compiled in Russia in the eleventh and twelfth centuries; epistles by Russian clergymen of the twelfth century; and an original Russian religious commentary, "Palaya," of the early thirteenth century--all written before the Mongol invasion of Russia (Ibid, pp. 18-120).

It is not uncommon also for Western psychologists to search for antecedents in a distant past, listing as writers on psychology, Aristotle, Tertullian, St. Augustine, Melanchton, and so on (Roback, 1961). Undeniably the church both in western and eastern Europe was the transmitter of classical psychological ideas to medieval populations.

But one may ask, did the medieval Russian thinking actually have an influence on contemporary Soviet psychology, or have writers like Sokolov, under the influence of present ideas, acquired a definite set which makes them perceive familiar ideas in medieval literature? Probably it works both ways. The direct influence of past ideas and the projection by modern authors of their own ideas into the past are both responsible for the fact that it is possible to discern similarities between ideas separated by a millenium.

In presenting the medieval psychological ideas Sokolov admits unreservedly that the writers had theocentric views, and discussed psychological problems from the viewpoint of an immortal soul. Their psychology was dualistic

throughout, conceiving body and mind as two separate entities. This is diametrically opposed to the monism of Soviet psychology. But the eclecticism of the medieval Russian writers permits Sokolov to find many points of contact between medieval and Soviet psychological thought. Thus he reports that John of Damascus admired the "novel ideas" of Heraclitus (1963, p. 20), and Heraclitus is also admired by Soviet philosophers. Sokolov reports that the Damascene used the Aristotelian concept of animated body, and idea close to the Marxist concept of mind as a property of matter (Ibid.). Though body-mind dualism is an unacceptable principle for Soviet psychologists, the medieval dualistic interpretation of mental processes has some parallels in Soviet psychology. For example the medieval thinking distinguished two forms of cognition, a sensory and a rational cognition. Sensory information was transferred to man by sense organs directly connected with the brain. Rational cognition was a function of the rational spirit. But even the spirit had an organ "in the central hollow of the brain" (Ibid., p. 36). Not only is such a psychophysiological interpretation of mental activity close to Soviet psychological views, but in recent Soviet psychology there is a trend to distinguish between sensory or "ideational activities" of the mind and non-sensory higher "intellectual activities" (Galperin, 1957). The medieval thinkers distinguished a memory of sensory origin and a memory achieved

through thought (Sokolov, 1963). The present Soviet psychologists distinguish between a sensory and a "meaningful memory" (Zaporozhets, 1964c). Thus Soviet psychologists on the one hand adhere strictly to a philosophical monism, considering matter as primary and mind as secondary. But on the other hand, when distinguishing qualitatively between different forms of mental activity, some Soviet psychologists preserve a dualistic way of contrasting related psychological phenomena. In later discussion it will appear that such a qualitative dualism is in agreement with dialectical thinking.

Sokolov is on familiar ground also with the medieval belief in the freedom of will, as voluntarism is an important trait of Soviet psychology. In the twelfth century collection The Bee Sokolov discovers also a developmental view of the child's mind, and a concept of maturation. And repeatedly he finds a discussion of the physiological basis of man's mind and especially of the functions of the brain in the medieval Russian literature (1963, pp. 81-120).

In the post-Mongol period of the fifteenth and sixteenth century Sokolov lists numerous religious tracts and apocrypha which discuss psychological problems, particularly the psychophysical aspects of man. Nil Sorski, a fifteenth century monk, author of a treatise on passion, has been called by some the "first native Russian psychologist" (Ibid., p. 222).

Among the sixteenth century Russian theologians who

wrote on psychological problems, two monks, Zinovi Otenski and Yermolai-Erasmus, are interesting, because they discussed a problem which has figured prominently in Soviet psychology, namely the relation between speech and thought. Zinovi emphasized the property of man which makes his mind quite different from that of animals (a constantly repeated idea in Soviet psychology). Word, he said, is born of reason, it is a kind of emanation of reason (Ibid., pp. 239-240). Yermolai-Erasmus presented a reversed view of this relationship; reason receives its reality through the word. "Without words reason is not revealed" (Ibid., p. 245).

Such examples suggest that Sokolov may be correct: there seems to be a continuity in Russian psychological thought throughout the centuries, and Soviet psychology has not arisen merely out of materialistic-Marxistic philosophy. Even though the solutions may have changed the psychological problems in which Russian psychologists have been interested have remained the same up to the Soviet times; the psychophysiological relation, the role of speech in development, the role of reason, the distinctive human psychological traits, and so on.

THE XVII AND XVIII CENTURY

The first Russian institution to offer courses in psychology was the Kiyev-Mogilian Academy, a semi-ecclesiastic

Ukrainian college, founded in 1632. The psychology taught there was basically sensualistic and close to biology, but there was also much discussion about the soul. The intellect was conceived as originating on the basis of sensory cognition, then developing a power of abstraction and generalization, and forming concepts. Concepts remained imperfect till they were fixed by means of words. Intellectual activity was conceived to be impossible without speech, though thought and speech were not treated as congruent. Kiyev psychologists anticipated even the term "inner speech" which later became a subject of extensive discussion in Soviet psychology. Sokolov takes the view that these Kiyev philosopher-psychologists, besides borrowing from Western-European scholasticists, made a genuine Russian contribution to psychology (Ibid., pp. 249-272).

In the eighteenth century several thinkers of an encyclopedic style appeared on the Russian scene, who also discussed psychological problems. In the philosophical views of these authors there was a distinct break with Aristotelian scholasticism, and the influence of Descartes, Leibniz, and Spinoza became dominant. But in their psychological ideas there was no break with the ideas of previous centuries. Except in the writings of Lomonosov, psychophysical dualism still prevailed, and a semi-rationalistic, semi-mystical concept of the "nature of man." But each

writer made also some individual contribution.

N. N. Tatishiev's (1686-1750) contribution was opening the field of educational psychology. He emphasized the role of instruction in human development, and regarded instruction as inseparable from natural development (which is a tenet of Soviet psychologists). He discussed developmental changes and proposed the division of man's life span into developmental age periods, each having different characteristics (Sokolov, 1963, p. 272). He was also active as an organizer of vocational education (Pedagogicheski Slovar, II, p. 463).

A. D. Cantemir's (1708-1744) contribution lay more in the field of physiology. He discussed the structure and functions of the brain and of the vocal chords (Sokolov, 1963, p. 295; Filosofskaya Entsiklopediya II).

M. V. Lomonosov (1711-1765) is given a prominent place by Soviet writers, because he was "the founder of philosophical materialism in Russia" (Sokolov, 1963, p. 295), (and because of his achievements in the fields of chemistry and linguistics). The qualification is made that "Lomonosov was a representative of a mechanicistic form of materialism, however, his views contain elements of dialectics," because he recognized change as a necessary characteristic of the existent (Filosofskaya Entsiklopediya III, p. 252).

A correlative of Lomonosov's materialism was his

psychological monism. He listed senses, memory, and thought together with "external states" (appearance, colour, and so on) and "bodily gifts" (size, strength, and so on) as "life properties." Psychological aspects of man, in Lomonosov's view, could be studied by the same methods as the rest of nature. Mental states could be cognized by the behaviour and mimical expressions of a person (Sokolov, 1963, p.299). If behaviorism would not be a derogatory term with Soviet psychologists, they could classify Lomonosov as the first Russian behaviorist. Still more apt would be to classify him as an atomist in a sheer Democritian sense. Lomonosov explained interaction between "things" as a coupling between variously shaped tiny particles of matter. Thus in the case of sensation the particles of the stimulus substance grip with their protruding cogs the particles of the liquid of which nerves consist. The coupling continues the whole length of the nerve till the brain is grappled (Ibid., p. 304). The high esteem for Lomonosov does not permit Soviet authors to use the description "vulgar mechanicism" they would have applied to such ideas if uttered by a Westerner (for example, Zaporozhets, 1960a, p. 28). Closer to Marxist views is Lomonosov's standpoint that senses give a faithful reflection of reality (Sokolov, 1963, p. 304). Soviet psychologists respect Lomonosov most for having abolished dualism, not only that of body and mind, but also between reason and passions (Ibid., p. 300). And, following an already established

Russian tradition, Lomonosov discussed the relation between thought and speech. He asserted a complete unity between word and thought (Ibid., p. 317). Further, Sokolov discusses the work of two Ukrainian moralists-humanists, G. S. Skovoroda (1722-1794) and Y. P. Kozelski (1728-1794), whose contribution to psychology was in the field of human abilities and of personality (Ibid., pp. 327-361; Filosofskaya Entsiklopediya III).

Sokolov finishes his account with A. N. Radishiev (1749-1802) with whom most other Soviet psychologists begin the history of Russian psychology (because Radishiev was the first prominent Russian revolutionary). In philosophy Radishiev was a materialist of the Holbach and Helvetius type. But concerning psychology his views seem to have anticipated Marxist standpoints: he regarded mind as a property of matter, but recognized a qualitative difference between the two. He had a developmental view of the human mind and discussed age differences. He stressed also the importance of "the hand as a pilot to reason" (Sokolov, 1963, p. 371), and the difference between animal and human mind. He, too, was interested in human personality and individual abilities. Sokolov states that in Radishiev's writings the previously accumulated Russian psychological knowledge found its crystallization. (Ibid.).

NINETEENTH CENTURY

Materialists

The term "materialist" has in the Soviet Russian usage a wide meaning. Sometimes it seems to be used just as a complimentary term, describing any ideas the Soviet writers appreciate. Thus the educationist Ushinski is described as having been "in many respects close to materialism" (Smirnov, 1957, p. 9) because his ideas are respected.

The most quoted Russian materialists of the nineteenth century, V. G. Belinski (1811-1848), A. I. Herzen (1812-1870), N. G. Chernyshevsky (1828-1889), and N. A. Dobroliubov (1836-1870) were materialists not in the same sense as Lomonosov was. They certainly were monists and rejected the concept of a soul existing independently of the body. But they all found a basic difference between animal and human mind, and they "expressed themselves against a vulgar materialism" (*Filosofskaya Entsiklopediya* I, p. 766), as did already Radishiev (Sokolov, 1963). Though they regarded matter as primary in the world, they did not conceive matter as a dead passive substance, but had a very dynamic view of life and of the human mind. This was in keeping with their own very active life (they were radical writers, holding the views of a utopian socialism, and were constantly in conflict with the ruling powers), and also with Hegelian philosophy which had a great influence on nineteenth century Russian

intelligentsia. "Life is action and struggle," said Belinski (Pedagogicheskaya Entsiklopediya I, p. 174). "The human personality finds its realization in a rational, ethical, free, and passionate action," said Herzen (Ibid. I, p. 539). Everything in nature is movement," said Radishiev (Sokolov, 1963). They believed that a child's mind develops best through activities and advocated the introduction of manual work instruction into schools as a means of physical, ethical, and social education (Pedagogicheskaya Slovar II, p. 660). They all believed that mental development is greatly influenced by social conditions and by upbringing, though they conceded innate dispositions. They requested a balanced training of intellect and emotions, and most of all of skills for living a useful and dedicated life in the community, and developing in children a true spirit of humanism. Believing in the power of education they were optimistic as to the results of such a training (Ibid. II). Pedagogicheskaya Entsiklopediya I. Though materialists in philosophy, and epistemological realists, these men, in their life ideals, were staunch idealists.

The works of these materialists were well known to the educated Russians, because of their fluent style of writing; and because of the respect for the authors' opposition to the government of the day, they had a definite influence on Russian thinking. Their views represented a stream of Hegelian materialism parallel to that of Marxism. In the twentieth

century the influence of Russian materialists considerably reinforced the readiness of Russian psychologists to accept Marxist principles.

The classification of the prominent educator K. D. Ushinski (1824-1870) offers difficulties to Soviet writers. His educational ideas were progressive enough for him to be persecuted by tsaristic authorities. But he "did not rise to the level of the revolutionary democratism and enlightenment of a Herzen and others" (*Pedagogicheski Slovar'* II, p. 550). Nevertheless his educational views were very similar to those of the enlightened democrat-materialists. Only his nationalism was stronger than theirs, for Ushinski rejected the psychological and educational ideas coming from abroad (thus paralleling some official Soviet trends). From the standpoint of psychology, his demand for child study in the interest of effective education is important (*Ibid* II, 549-553; Zaporozhets, 1964b).

Idealists

The dualistic view of body and mind, held by Russian writers from the tenth until the eighteenth century, was abruptly abandoned in the nineteenth century. Not only the materialists, but also the idealists became monists. And a dynamic element characterized the idealists, too. The most influential Russian idealist philosopher V. S. Soloviov (1853-1900) was a Leibnizian spiritualist. The world

consisted for him of monads. Anticipating modern physics, Soloviov conceived atoms, the seemingly material monads, as "dynamic immaterial units of force" (V. Losski, 1954, p. 100). But mind, the "me," was a supranatural substance, striving constantly for a reunion with God. Being an isolated monad, the mind could cognize external reality only through inner experience, contemplation (Ibid; Filosofskaya Entsiklopediya II). L. M. Lopatin (1855-1921) was another Leibnizian "dynamic spiritualist" (Filosofskaya Entsiklopediya III). The manifestations of mind, said Lopatin, vary from moment to moment, and constitute an "uninterrupted disappearance" (V. Losski, 1954, p. 163). For the supranatural "me" in its isolation cognition is only the product of inner creativity (Filosofskaya Entsiklopediya III). And for the intuitivist N. O. Losski (1870-), partly a Bergsonian, but mainly a Christian mystic, cognition resulted from "intentional acts" (Ibid., III), through intuition, both intellectual and mystical (V. Losski, 1954, p.261). N. Y. Grot (1852-1899), a psychologist who first was under the influence of Sechenov, later turned to idealist philosophy, and recognized cognition only as an analysis of subjective experience (Filosofskaya Entsiklopediya).

For these philosophers-psychologists only a mental world seems to have existed, the external reality was an "illusion" (Losski), and agnosticism was their standpoint concerning mental processes of others. Psychological

agnosticism was adopted even by less spiritualistic thinkers. The Petersbourg psychologist A. I. Vvedenski (1856-1925), a neo-Kantian logicist, declared that the mind of another is unprovable, and criticized the use of experimental methods in psychology (Ibid., II).

In relation to the development of Soviet psychology what these idealists actually taught in not important. These thinkers, however, helped to create a prejudice against the term "idealist." The reason for this prejudice was the fact that the Russian authoritarian government supported spiritualist thinking, especially if it was strongly religious, like Soloviov's and Losski's, and persecuted materialism. Thus idealism became suspect of being a tool of the authoritarian government, and materialists acquired a halo of martyrdom.

The heritage of Russian medieval thinking seems to have split in the nineteenth century. The idealists inherited the mystical god-searching spirit of the monk-philosophers; the materialists took over their keen interest in the world and human activities; and the physiologists inherited the medieval absorption in the human body, particularly the brain.

Physiologists

The nineteenth century Russian revolutionary materialists had a great esteem for exact sciences, the more so as they themselves possessed no scientific disposition. Scientists were also idealized in Russian fiction (from

Turgeniev on). Therefore it is not surprising that when Russia acquired a native and prominent physiologist, I. M. Sechenov (1829-1905), the veneration for him was great.

Soviet psychologists who classify the physiologist Sechenov as a psychologist are to some extent justified, because Sechenov himself held the view that he was doing psychological work and was writing articles on psychology. "It is clear," he said, "that only physiologists are qualified to investigate the problems of analytical psychology" (Sechenov, 1960, p. 179). This standpoint was a reaction to "debates concerning the substance of spirit and its dependence on the body, . . . a dialectical gymnastics" (Ibid., p. 31), and to the spiritualistic agnosticism. Sechenov created the term "reflexes of the brain" to explain psychological phenomena. "Physiology provides a number of facts which establish the affinity of psychical phenomena to the so-called nervous processes in the body, that is, entirely somatic acts" (Ibid., p. 15). "All external manifestations of the functioning of the brain can be reduced to muscular movements" (Ibid., p. 33). The movements, according to Sechenov, are either voluntary or involuntary. Involuntary movements, or reflexes, depend upon an "intercellular linkage" of fibres of sensory and motor nerves (Ibid., p. 56). Voluntary movements are identical with involuntary movements in their physiological mechanism, "all conscious movements . . . are reflex movements in the strict

sense of the term" (Ibid., p. 110), they are only slower, always conscious, an image may appear in the process, will and motives may play a role in it (Ibid., p. 75).

Sechenov's explanation of emotions is not very clear. Emotions are not an integral part of the muscular-cerebral reflex. "All psychical acts without exception, if they are not complicated by emotion, develop by way of reflex" (Ibid., p. 110). "Emotion . . . originates in the instinctive craving for pleasure" (Ibid., p. 121). But cravings, or "desires arise in the child along with the development of emotional psychical formations" (Ibid., p. 120). This reasoning seems somewhat circular. Emotion for Sechenov is, on the one hand, something instinctive; on the other hand, it develops associatively, through the repetition on similar experiences (Ibid., p. 120).

But the explanation of cognitive processes is simple for Sechenov. This he does with the help of the term "inhibition." He derived this concept from a physiological observation that some ways of nerve excitation may lead not to the activization, but to paralyzation of a muscle group (Ibid., pp. 43-45). This observation he combined with his conception of the reflexes as a three-part process: (1) sensory input, (2) sensory reflection in the brain, and (3) motor reaction. The "middle link" (Zaporozhets, 1956a) is a reflection in the brain of the objective situation in which the action is to take place. This middle link can also act

as a defense mechanism and inhibit the action if the reflected situation does not warrant it. "There are many psychical reflexes whose last member, that is, movement is inhibited" (Sechenov, 1960, p. 119). And thought is nothing else but an incomplete reflex the last phase of which is inhibited. "A thought is the first two-thirds of a psychical reflex" (Ibid., p. 116).

These views Sechenov based on physiological experimentation, dissecting frogs and other animals. Philosophically these views were grounded on a mechanistic determinism. Sechenov's views included also an epistemological realism. Realism has been common to all Russian thinkers, except the nineteenth century idealists. But Sechenov's realism is one of the strictest. "The indications of sense organs are parallel to reality" (Ibid., p. 446). "Similarities and differences between objects perceived are real similarities and differences" (Ibid., p. 454), "mental abstraction of parts and attributes from an object as a whole is based on the discreteness of the physiological reactions of perception and the differences that exist between them" (Ibid., p. 342). It is true that Sechenov states that "thought is highly subjective" (Ibid., p. 118). But the word subjective does not refer here to the validity of thought content, but to its being an inner experience, not outside the thinking organism.

Sechenov's book Brain Reflexes was banned by Russian

authorities in 1866 for "destroying the moral foundations of society" (Budilova, 1955, p. 8). The present Soviet evaluation of Sechenov is as follows: "He has solved the most important connection between the mind, the brain, and the outer world, on the basis of a conviction that an organism and its life conditions form a unity, and on the principle of the primary of matter" (Ibid., p. 7; underlining mine). The Western world knows Sechenov as a teacher of Pavlov.

Whereas Sechenov is well-known mainly within the limits of the Soviet Union, I. P. Pavlov (1849-1936) is universally known. Such wide renown is not always conducive to a thorough knowledge of an author. On the contrary, there is a tendency to project into a famous author's writings one's own ideas and understandings. In later discussion it will be evident how many Soviet psychologists, including Zaporozhets, projected into Pavlov's physiological writings their own psychological ideas and re-interpreted his sayings for purposes of psychology. Among the Western psychologists the behaviorists have most frequently interpreted Pavlov's work in the light of their own ideas, and called him "the founder of modern behavioral psychology" (Pavlov, 1966, subtitle). Undoubtedly Pavlov's writings abound in statements which express the basic principles of behavioristic psychology, and probably had a considerable influence on early behaviorists. But Pavlov's views have a somewhat different angle. For example when Pavlov states that "we tried to discipline our

thought and our speech in order to ignore completely the mental state of the animal: we limited our work to thorough observation and exact description . . .," this sounds like a program of behavioristic psychology. But the ending to the sentence is: ". . . description of the influence exerted by distant objects on the secretion of the salivary glands." And in the sentence preceding the above quotation Pavlov says, "we . . . desired to remain physiologists instead of becoming psychologists" (Ibid., p. 53). Thus the statement was meant to be a program for physiological research. In contrast with Sechenov, Pavlov did not call himself a psychologist. During most of his life he attacked psychologists (Pavlov, 1941, p. 77) and repeatedly spoke of "so-called psychical processes" (Pavlov, 1966, p. 75ff). His aim was not to develop a new psychology, but to substitute it by a study of the physiological functioning of the nervous system, a "natural science" (Ibid., pp. 57-75). But Pavlov's ideas have penetrated psychological thinking, particularly in the United States, to an extent that inexact generalizations concerning Pavlov occur easily. For example: "What Thorndike and Watson did in the United States, together with Pavlov in Russia, was to get the S-R formula taken seriously . . ." (Hebb, 1964, p. 3). Pavlov did not set up formulas, though he studied the physiological effects of various stimuli most of his long life.

Soviet psychologists do not agree at all with the

classification of Pavlov as a behaviorist, and, though re-interpreting Pavlov themselves, they can be seriously annoyed by American interpretations of Pavlov, be they as sympathetic as Razran's (Zaporozhets, 1955b). One can wonder what the Soviet reaction would be to such statements as, "The writings of Freud and Pavlov bear a remarkable similarity . . ." (M. Kaplan in Pavlov, 1966, p. 28).

During the nineteenth century Pavlov's work was strictly in the field of physiology. In the 1870's his research was in the area of the blood circulation and the heart. Already the study of vascular functions led him to the observation of reflexes. Later Pavlov's research moved to the area of the digestive system. During the study of the functioning of digestive glands Pavlov discovered the conditioned reflex (Pavlov, 1941, pp. 11-13; Wells, 1956, pp. 15-18). But Pavlov's main work on the conditioned and unconditioned reflexes belongs to the twentieth century, and will be disc~~over~~ussed in the next section.

Likewise the work of the physiologist V. M. Bekhterev (1857-1927) belongs mainly in the twentieth century.

TWENTIETH CENTURY. PRE-REVOLUTIONARY RUSSIAN PSYCHOLOGY

The most decisive change during the last decades of pre-revolutionary Russian psychology was the introduction of experimental psychology. German influence was responsible for the change, especially the example of Wundt and Ebbinghaus.

Kiyev again was in the lead. Already in the 1880's and 1890's O. M. Giliarov, a Platonic philosopher, influenced by Fechner, began experimenting in psychology (*Istoriya Kyivs'kogo Universitetu*, 1959). And in 1892 the best known pre-revolutionary Russian psychologist, G. I. Chelpanov (1862-1936) was appointed to the chair of psychology in Kiyev (*Ibid.*) Chelpanov was in his philosophical views a Kantian idealist (Filosofski Slovar'). As a psychologist Chelpanov is classified also as an idealist (Smirnov, 1957). The term "idealist," just like "materialist," is a loose term in the Soviet usage. In Chelpanov's case it means that, alongside other psychological research methods, including a statistical processing of experimental results (Bauer, 1962) he also recognized introspection as one of the methods. But notwithstanding ideological differences, Chelpanov is remembered with respect by Soviet psychologists. He is praised for an energetic development of experimental psychology, for being an outstanding teacher, and for "imbuing his lectures with a rich factual material" (Smirnov, 1957, p. 9). His textbooks of psychology were widely used. In 1907 he became Professor of Psychology at the Moscow University. And in 1912 he became the founder of the first Russian Psychological Institute (at present it is renamed the Psychological Institute of the Akademy of Pedagogical Sciences). I. P. Pavlov sent him warm congratulations on that occasion (Pavlov,1955).

A significant fact for the development of Soviet

psychology was that many earlier Soviet psychologists were students of Chelpanov, or came into contact with his work. The Chelpanov trained psychologists later became the core of the Moscow group of Soviet psychologists, which still later was joined by A. V. Zaporozhets.

Other better known Russian experimental psychologists were *N. N. Lange* at the Odessa University, *A. P. Nechayev* and *A. F. Lazurski*. Nechayev is now criticized as having been too "pedocentric" (that is, he was interested merely in studying the child and its free development, and ignored the role of education), and for the weakness of his experimental methods (Smirnov, 1957, p. 10). Lazurski is remembered as the first to use the "natural experiment" (Pedagogicheski Slovar')

By the twentieth century Pavlov's work had become so widely known and appreciated that in 1904 he was awarded the Nobel prize for his research on the physiology of digestion. From the 1890's until the late 1920's Pavlov dedicated himself to the study of the conditioned reflex in dogs, or, as it is alternatively translated, the conditional reflex (Wells, 1956, p. 3, also Gantt in Pavlov, 1960).

Pavlov had begun with the elaboration of Sechenov's concepts: the reflex, incitation, inhibition, associational connections, and others. Sechenov's concept of the reflex was of a three-stage function of a three-part arc of nerve cells: the receptor nerves, the central nerve system, and

the effector nerves. The fact observed by Pavlov with his dogs that salivary glands could be activated from the distance by the mere sight of food, did not destroy the symmetry of the reflex process. Though food in such experiments did not come into direct contact with the oral surface, "substances act upon other specific body surfaces--upon the nose, eye, ear--thanks to the surrounding medium (air, ether) in which the organism and the exciting substances are immersed" (Pavlov, 1966, p.65). For Pavlov this fact fitted into a picture of the organism and its environment forming a biological unity. "The wonderful complexity of the higher and lower animals can exist as a whole only so long as all the delicate and exact balances of their constituents remain in equilibrium one with the other and with the outside world" (Ibid., p. 62), stated Pavlov in 1903. He regretted that "up to the present we have no scientific term for this . . . ability to maintain an external and internal equilibrium" (Ibid., p. 63). He rejected "adaptation" as connotating "certain subjectiveness," and distrusted "vitalism" as being close to animism (Ibid). Pavlov's aim was to explain all observed data "from the physiological point of view as a function of the nervous system" (Ibid., p. 56).

When Pavlov observed that dogs will salivate not only at the sight of food, but also at hearing noises, or feeling temperature changes, or at any stimulus which originally accompanied the receiving of food, this fact fitted easily

into his neurophysiological explanation. It needed only a subtler analysis of the function of cortical cells. The concept of "intercellular linkages," taken over already by Sechenov (1960, p. 56), was expanded in Pavlov's work through the statement of various neurological laws. The law of generalization helped to explain how stimuli not connected directly with food could activate digestive glands (Pavlov, 1927; 1966, p. 225ff). "A nervous impulse reaching the cortex from a definite point of the peripheral receptor . . . irradiates from its point of origin over the cortex . . ." (1966, p. 251). This irradiation facilitates the formation of temporary paths from various stimuli, originally received simultaneously to the effector nerve cells. This theory necessitated the distinction between automatic and acquired reflexes, or the unconditioned, innate reflexes which follow always the same nerve path, and conditioned reflexes which are learned and only temporary. But "at the basis of each conditioned reflex . . . there is an unconditioned reflex . . . a temporary path leading to the central point of this reflex" (1966, p. 56).

Thus far Pavlov remained within the limits of physiology. Also his concept of the conditioned reflex as an acquired reaction is close to Sechenov's concept of voluntary movements as acts learned under the influence of environmental condition (Zaporozhets, 1948b, p. 149). But quite novel was Pavlov's discovery that, though stimulation of digestive

glands from a distance produces the same effect as physical contact, the resulting conditioned reflexes are different from unconditioned reflexes when observed for a longer span of time. The conditioned reflexes are "permanently subject to fluctuation" (Pavlov, 1966, p. 55), and some facts about them "are with difficulty explained from the physiological point of view" (Ibid., p. 72). As an example, Pavlov reports the observation that a conditioned reflex, if repeated, loses its activity, and states that this cannot be explained through fatigue, because such an extinction occurs only in the case of weak stimulation, and not when strong stimuli are repeated. "Probably we have to deal here with quite peculiar conditions for excitation," concludes Pavlov (Ibid.). Pavlov admits also that subjective factors affect salivation in dogs: whether they have appetite; whether the food was eaten avidly or unwillingly; whether "it suits the dog's taste" (Ibid., pp. 50-51). On the one hand Pavlov states that "we have met no such phenomena as wishes" (Ibid., p. 70), but on the other hand he speaks of desire and of the observation that "often a powerful desire may inhibit certain special reflexes" (Ibid., p. 72). Quite grudgingly Pavlov concedes that there are "psychic phenomena" which are "impossible to disregard" (Ibid., p. 53). But in most cases he adds the phrase "so-called" and tries to reduce the difference between "psychic" and physiological facts to a quantitative difference. "The so-called psychical phenomena, although observed objectively in animals, are distinguished

from the physiological, though only in degree of complexity. What can be the importance of how they are designated--"psychical" or "complicated nervous"--in distinction from the simple physiological, once it is recognized that the duty of the naturalist is to approach them only from the objective side, in nowise taking into the consideration the question of the essence of the phenomena?" (_Ibid_., p. 75).

For thirty years Pavlov continued to work as such a naturalist, studying not mental phenomena, but the "higher nervous activity," discovering subtle laws concerning excitation and inhibition, analyzing and synthesizing functions of nerve cells, generalization and discrimination, extinction and trace effects, reinforcement, induction, and so forth. But all this research was done from the standpoint of a physiologist-neurologist. Never did Pavlov call himself a psychologist. On the contrary, he repeatedly attacked psychologists (Gantt in Pavlov, 1941), and was very much astonished that psychologists, beginning with Watson, adopted his findings as the basis of a psychological theory (Wolman, 1960, p. 62). Then in the 1930's a new phase began in the work of Pavlov, when he became interested in psychiatry and relented towards psychologists (Gantt). But this belongs to the section of post-revolutionary Russian psychology.

On the surface _V. M. Bekhterev_ (1857-1927) seems to belong with Sechenov and Pavlov. A contemporary of theirs, he, too, was a physiologist _cum_ psychologist, and he called

his later theory "reflexology." But posterity does not give him the same position as the other two. Soviet psychologists grade him as "only partly materialist" (Smirnov, 1957, p. 10), a Westerner says, "he was less cautious in his efforts to build a bridge between physiology and psychology, . . . and reduced the higher mental processes to simple transformations of physical energy" (Wolman, p. 67). The most recent Soviet opinion is that he was an eclectic and mechanicist, and close to behaviorism; that he ignored society as a factor in human development; and that he eventually arrived at a "vulgarized materialism" (*Pedagogicheskaya Entsiklopediya* I, p. 197). In contrast to Pavlov, Bekhterev called himself a psychologist, and his aim was to develop an "objective psychology" (*Ibid*.).

POST-REVOLUTIONARY SOVIET PSYCHOLOGY

"A radical break in Russian psychology did not take place immediately after the Revolution, but some years later, around 1921," says A. A. Smirnov, 1957, p. 10). One would think there was no chance for psychological work at all in the turmoil of the Revolution and of the Russian Civil War of 1918-1920. (According to the writer's recollection even elementary schools worked only sporadically at that time in Russia). When in 1921 life became somewhat stabler, it was not a break in psychological views that resulted, but a boiling cauldron of opposing trends, of various psychological schools of thought in flux as well as in strife.

Idealists

At first the brunt of the battle was directed against the subjectivist psychologists, mainly because of their philosophical standpoints, and also because their views were associated in the minds of the revolutionaries with the tsaristic regime. In 1921-1923 most of the extreme idealists lost their positions at the universities (Bauer, 1952, p. 51). Some, like Losski, emigrated to the West. Some, like M. Y. Basov, an idealist-voluntarist, student of Lazurski, tried to adapt themselves to Marxist thinking (*Pedagogicheskaya Entsiklopediya* I, p. 10).

But *Chelpanov* saw no need either to retire or to recant. In 1926 he openly declared, "I have not given up my stand. I have been an idealist in philosophy, and I shall remain one"(Smirnov, 1954, p. 10). He tried to persuade his opponents that one need not be a materialistic monist in order to work in experimental psychology, and that the results of his research were in no contradiction with Marxist standpoints. But this was a "scandalous distortion of Marxism" (*Ibid*., p. 12). Chelpanov was attacked from all sides, including Pavlov, who was not a Marxist. At last Chelpanov "had to leave the battleground" (*Ibid*., p. 12), and was dismissed.

Behaviorists

Contact with Western psychology was not broken off after the revolution. To judge by the amount of criticism

directed against various psychological schools, the greatest interest seems to have been aroused by Gestalt psychology, Freudianism, personality psychology, later Piaget. But initially behaviorism evoked the greatest interest(Kolbanovski, 1956; London, 1949). Freudianism did not take roots well in Russian thinking, there was only a period of passing interest in it (Bauer, 1952). With Gestaltists, personality psychologists, and particularly Piaget, Russian psychologists felt more affinity, still they made use of these theories only selectively (Vygotski, 1929, 1956; Schniermann, 1928). But there was a Russian brand of behaviorists.

The attraction of behaviorism to Soviet psychologists was understandable. Subjectivist psychology had for a long time had the protection of authorities and suppressed were views which ignored the existence of an "immortal soul." Now with a vengeance the soul was ignored. "The tide turned so strongly in the favor of materialists . . . that for a time, psychology per se was virtually annihilated and replaced by physiology and biology" (Bauer, 1952, p. 51). A psychology in which consciousness was completely ignored had a great appeal at that time. The more so, as there was Lomonosov to refer to as a behaviorist. And behaviorism became so Russian that "Bekhterev laid the foundations for behaviorism five years before Watson" (Zaporozhets, 1960a, p. 32). (By the way, Bekhterev claimed also that he discovered the conditional reflex and not Pavlov (Gantt in

Pavlov, 1941, p. 20). Till the middle of the 1920's behaviorism had many adherents.

But soon it appeared that behaviorism was unsuited to the Russian style of thinking. Behavioristic thinking, at its best, is a most abstemious way of thinking. It requires a great renunciation: of philosophy; of an existential experience of the human personality; of a dynamic perception of reality; of the rich detail of individual characteristics of a mind at work; of thinking in wholes; of anything that is qualitative in psychology, for the sake of mathematical precision. Of course, a selfless renunciation is not needed if the psychologist is indifferent to philosophy or existential experiences, and interested only in amassing numerical data. But Russian thinkers are neither indifferent, nor can they abstain from an all-embracing theorizing.

So the fervent Russian behaviorists invented their own all-embracing theory. Razran tells the story of Yenchman who "attempted a synthesis of Marx and Watson by promulgating that consciousness is an illusory-deceptive product of the capitalist class system and that it will wither away and disappear in the future socialist classless society." On the basis of Bekhterev's theory that consciousness is the result of cortical resistance to inhibitions, the Yenchmanists tried to organize psychology clubs where "through a correct socialist peripheral uninhibited living consciousness could be more quickly liquidated" (Razran, 1950, p. 149).

Soviet references to Yenchman point to the possible veracity of this story (Smirnov, 1957). The ridiculous aspect of such excesses soon turned Soviet psychologists from behaviorism. Yenchman is now classified as a "vulgar materialist" (*Ibid.*).

Reflexology

Bekhterev was less extreme, but he denied the possibility of studying consciousness. He renamed his "objective psychology" "reflexology" in 1917(*Pedagogicheskaya Entsiklopediya* I). He conceived the human body as a Cartesian machine. Consciousness, in his interpretation, was a state of physical energy. All physiological processes were accompanied by mental ones, and *vice versa* (Wolman, 1960). Vygotski classified Bekhterev's theory as a panpsychism (Kolbanovski, 1956, p. 107). Present Soviet writers speak appreciatively only of Bekhterev's physiological work as a neuropathologist (*Filosofski Slovar'*, 1963).

Reactology and Pedology

Another Soviet behaviorist was *P. P. Blonski* (1884-1941). Later, under the influence of *K. N. Kornilov* (1879-1957) he abandoned behaviorism. Both were former students of Chelpanov. And both enthusiastically undertook to reconstruct psychology on a new Marxist basis. The ideological war had already two fronts: against subjectivist psychology and against the "naive materialists"

(Smirnov, 1957). The idealist, or "metaphysical conception of empiric psychology" was treated as an anachronism (Borovski, 1929, p. 177). Against other materialists the arguments were, first, that though matter is primary, and mind only a property of matter, a qualitative difference must be made between the two. "We had to fight for the very existence of psychology as a separate discipline," said Kornilov (Ibid., p. 180). Second argument was that a clear distinction must be made between natural and social conditions; the influence of social factors on the development of mind had to be emphasized when a social revolution was in progress. And, third, the principle of "dialecticalness" was set up (Ibid.); change was to be regarded as an important aspect of reality. As a fourth principle Kornilov stated the necessity to study consciousness, though it was possible to do it only indirectly (Smirnov, 1957). In order to have a demarcation line between Bekhterev's mechanicistic views and his own more dynamic ones, Kornilov rejected the term reflex and substituted for it "reaction." Hence the term reactology. Consciousness he defined as the sum total of reactions.

Kornilov, a president of the reopened Psychological Institute in Moscow, and founder of the Pedagogical Institute, was held in high esteem in the 1920's (Borovski, 1929). But in the later 1930's he was taken to task for his "vice" of pedology. Still more involved in the same "error" was Blonski, who had coined the term "pedology" (Pedagogicheski Slovar' I). The word pedology means nothing else but child

study. The pedologists were engaged in the practice of "psychotechnics" (approximately the same as psychometrics). Pedology together with psychotechnics constututed an intensive program of experimenting, testing, and calculating intelligence quotients and levels of maturity, mental, muscular, and so on. But by the 1930's authorities discovered that pedology "carried in its womb the reactionary ideas of the United States of America and Western Europe about the fatal determination of a child's future through biological and social factors, heredity, and an unchangeable environment" (*Pedagogicheski Slovar'* II), and the practice of pedology was forbidden. All psychologists who were connected with pedology fell into disfavour, their names were no longer mentioned officially. Though in the 1950's a rehabilitation followed, their "errors" are always recounted (Sheyin, 1964). And Kornilov, who started as a fighter against mechanicism, was now himself described as a mechanicist (*Pedagogicheski Slovar'* II).

Marxist Psychology

Though Kornilov had already proclaimed the goal of adapting psychological theory to Marxist teaching, younger men were needed to carry this out. The most prominent among the post-revolutionary generation of Russian psychologists was *L. S. Vygotski* (1896-1934) who left a considerable imprint on Soviet psychology. He also left an indelible influence on A. V. Zaporozhets. Vygotski's personality was an important

factor in the process by which it was not psychology which adapted itself to Marxism, but Marxism was adapted to psychological principles.

Vygotski

Very few of Lev Vygotski's ninety publications are at present available, in the West only his book Thought and Language and a few short articles. As Vygotski was very active in the "psychotechnical" program, the pedology ban still applies to the rest of his writings. But Vygotski's former co-workers and students quote repeatedly also from his non-available writings. His book Psychology of Art was published in 1965, but it has not yet reached the West.

The book Thought and Language conveys the impression of a fluency of language and of argumentation, of erudition, and of an atmosphere of old-worldly cosmopolitan culture. Vygotski quotes repeatedly Goethe, Bergson, Heine, Husserl, and other philosophers and poets. In his discussions he reveals a comprehensive knowledge of the psychological research conducted at that time in Western countries. Though strongly attracted to Western-European psychological theories, especially to Piaget and the Gestalt theory, he uses these as a foil for developing his own standpoints, drawing sometimes on an old Russian fund of ideas (1956).

From his biography, as given by V. N. Kolbanovski (1956), one learns that Vygotski was a very versatile and gifted person, and lived a very intense life. In 1917, at the age of

twenty-one, he graduated simultaneously from two faculties, law and philosophy. After graduation he worked as a teacher in his Bielorussian hometown, Gomel', teaching simultaneously at various schools, including a drama school, a technical school, and a conservatory; acted as an editor; founded, as a hobby, his own psychological laboratory, and wrote articles on psychology. His first psychological publication was on psychology of art (his thesis was later written on the same topic). His psychological ideas attracted attention and he was invited to join the Moscow Psychological Institute, then directed by Kornilov. There he showed an independence of ideas ("he became at once a teacher and not a disciple" (Ibid) and engaged in hectic activity. He lectured at several higher educational institutions in Moscow, besides research work at the Institute, and directed the Department of Education of Defective Children. In 1926 he contracted lung tuberculosis, but continued writing in bed. After recovery he dedicated his energy to defining a theoretical basis for a dialectical psychology and overcoming of "childhood ailments" of Soviet psychology. He became also interested in psychiatry, and enrolled as a medical student at the same university where he worked as a professor of psychology. His magnetic personality soon attracted a group of enthusiastic young psychologists, among them A. R. Luriya and A. N. Leontiev. They began a program of eager experimentation, mainly con-

cerning child development and educational psychology. The central theme was the development of thinking and its relation to speech (Ibid., pp. 104-113).

Vygotski died at the age of thirty-seven. The biographer concludes with the statement that "it is impossible to evaluate the development of Soviet psychology without taking into consideration the great contribution such an outstanding psychologist as Vygotski made" (Ibid., p. 113).

Dialectic Materialism

To understand the reformulation of Soviet psychology which the Vygotski group undertook, a brief consideration of the term "dialectic materialism" is necessary. At first glance the term seems to refer to two quite different philosophical systems. Traditionally only the following line of philosophers was classified as materialists: Leucippus, Democritus, Epicureans, Hobbes, Spinozaists, Hartly, Condillac, French Encyclopedists, and Feuerbach (Windelband, 1907), whereas the line of dialectic thinking led from Heraclitus to Hegel, Hegel being at the same time classified as an idealist. On the basis of such a classification Marx might be viewed as having incongruously grafted materialism on an idealistic philosophy. But a viewpoint is also possible which recognizes materialism and dialectic thinking as interrelated.

Hegel's philosophy was a singular phenomenon in

European philosophy. It was like a lens in the focus of which all philosophical strains of previous centuries converged, particularly those of classical Greek thinking; and from the focus of Hegel's philosophy, notwithstanding the ponderousness of Hegel's style, his influence radiated to widely differing schools of thought such as the obscure Hegelians proper, Marxists, Fascists, Bergson, all varieties of existentialists, and Leninists. Russian thinking was affected by Hegel's philosophy in two ways: (1) directly, because in the nineteenth century numerous Russians attended German universities, and, on return, spread their conception of Hegelianism in Russia; and (2) indirectly, through Marxism. Russian Marxists acknowledged their indebtedness to Hegel. Lenin expressed this in one of his aphorisms: "It is impossible to understand Marx's "Capital" . . . without having thoroughly studied and understood the whole of Hegel's "Logic". Consequently half a century later none of the Marxists understood Marx!" (1961c, p. 180).

The part of Hegelian ideas which attracted Russians and Marxists most was the dynamic element, the Heraclitean heritage in it. Soviet theorists claim a direct descendance of their ideas--through Lenin, Engels, and Hegel--from Heraclitus. Lenin praised Heraclitus as the founder of dialectics (Istoriya Filosofii I). By contemporary Soviet classification Heraclitus is "an outstanding materialist and dialectic" (Ibid. I) with the qualification that "he

formulated dialectical principles in a general, naive way" (Filosofskaya Entsiklopediya, I).

It is not only Marxists who, in retrospect, see in Heraclitus' ideas a combination of materialism and dialectics. Formerly only the dynamic aspect of Heraclitus' idea of flux was stressed (of the 139 extant Heraclitean fragments three speak about the impossibility of stepping twice into the same river (Diels, 1912, pp. 80, 87, and 96)). But now W. K. C. Guthrie points out that "Heraclitus' statement . . . that it is not the same river the second time you step into it, illustrates the culmination of materialistic belief. We speak of the river as the same river from day to day . . . Our justification for this habit of thought is that the form remains the same: matter as it comes in is poured, as it were, into the same mould" (1962, p. 467). Thus not Heraclitus, but those who disregard the flux ignore the matter and consider only the form, the idea of the river.

Viewed from such an angle Heraclitus may be seen as the first known dialectic materialist. Already Gomperz spoke of "Heraclitus' theory of matter," and pointed out that Heraclitus was the first to build bridges between natural and spiritual life, between matter and mind, "which have never since been destroyed" (1955, p. 63).

Thus it would be possible to say that the philosophical basis of Soviet psychology is as old as European civilization. One might think that the step Marx and Engels

had taken in combining materialism with Hegel's dialectics was, after all, not so startlingly novel. But Leninists prefer to see in the combination of materialism and dynamism a deliberate achievement of the founders of Marxism. Lenin points out (1961a) that Engels said, "Marx and I were probably the only persons who saved the dialectics (from the ruins of Hegel's idealism) and translated it into a materialistic conception of nature and history" (Engels, 1961, p. 10). The existence of two antagonistic elements in Marxism is in agreement with the Hegelian view of development as a clash of opposites. From the dialectic standpoint one might say that it is just the incomplete synthesizing of idealistic and materialistic elements in Marxist theory that have been a source of stimulation to Soviet thought, including psychological thought.

The materialistic part of the Marxist theory consists of a monistic view which considers matter as the primary element of existence. But Leninists are careful to point out that their concept of matter is not that of a passive substance, or of building blocks of the universe. Such a concept is called metaphysical (Spirkin, 1964, p. 80). Objects do not consist of matter, but are a concrete manifestation of matter (*Ibid*., p. 82). The view of "neutral-materialism" that matter and spirit are both mere forms of cognition is also rejected as being idealistic, because it reduces all existent to contents of sensation (*Ibid*., p. 83).

Matter is real, but it is manifested in movement and change. "Movement is the existence form of matter, never and nowhere has there been or can be matter without movement, or movement without matter" (Engels, quoted in Lenin, 1961a, p. 51). Mechanicistic view of matter, which characterized the thinking of some early Russian Marxists, is now rejected as unscientific and "a nihilism in respect to dialectics" (Filosofskaya Entsiklopedia III, p. 425). Modern atomic science, Einstein's theory and the quantum theory are accepted as being closer than Newtonian physics to Marxism (Spirkin, 1964).

Matter is conceived not only as dynamic in movement, but also as structered, organized. (Ibid., p. 88). There are various levels of organization, from atomic units to complex organisms. "Mechanical, physical, chemical, organical, and social . . . all these forms (of organization) are interconnected and there is a transition from one form to another" (Engels quoted in Ibid., p. 89). Though "it would be a crude error to depict universal matter as moving in a straight line towards its highest efflorescence, man" (Ibid., p. 89), still man represents the highest level of organization of matter (Ibid., p. 105), particularly the human brain. And consciousness is the inner state of highly organized matter, its function (Lenin, 1961a, p. 84). Though consciousness is regarded as secondary to matter (Ibid., p. 39) it is regarded as real, incontrovertible, and

its existence being manifested as a process, a constant development.

Thus the materialistic aspect of Marxist theory is inseparable from its dialectic aspect. The principles of dialectics were taken over from Hegel as he had formulated them. Years of clarification of terms sifted out two Hegelian principles of dialectics as the most important ones: "the interdependence of all things and development in the universe being the result of inner contradictions active in it" (Filosofskaya Entsiklopediya I, p. 479; Hegel, 1929, pp. 104-120).

The principle of mutual interdependence is closely connected with the Marxist concept of man as a social being (Spirkin, 1964, p. 107), the individual and society seen as being in constant interaction. Cognition is seen as an interaction between an individual consciousness and the environment of the individual. Life on any level is seen as interaction between the organism and its biological environment. Interaction is the common property of all matter (Ibid., p. 127). The material unity of the world is manifested in the fact that all in the world obeys the same laws of dialectics (Ibid., p. 84). Society is included in the universal unity. Society is, though qualitatively different from other forms, the highest form of the movement of the matter (Ibid., p. 85).

The principle of development states that in the world

nothing exists in a completed, final form: all objects and phenomena constantly change, pass from one state into another, arise and disappear (Ibid., p. 17). At different moments the same organism, object, or phenomenon may take a form which differs from the form it had at a previous stage to such an extent that it is contradictory. "Life consists just precisely in this--a living thing is at each moment itself and yet something else" (Engels, 1940, p. 136). "So long as we consider things as static and lifeless, each one by itself . . . we do not run up against any contradictions in them . . . . But the position is quite different as soon as we consider things in their motion, their change, their life, their reciprocal influence on one another. Then we immediately become involved in contradictions. Motion itself is contradiction" (Ibid., p. 135). These contradictions may take form also as "negation of negation:" the growing plant negates the seed from which it developed, and the seed which it produces negates the plant (Ibid., p. 152). Changes are not merely quantitative, and not merely qualitative, but a gradual quantitative change can suddenly become a qualitative change, as it happens with water at freezing or boiling point (Ibid., p. 141). Such a development through contradictory stages is regarded in dialectics not only as a manifestation of development, but as its cause, its motive force. The inner contradictions, the struggle between opposing forces, the transition of quantitative

changes into qualitative differences cause the movement, change, and development in matter (Spirkin, 1964, p. 17). Dialectics is seen also as the study of the most general, universal laws of the development in nature, society, and the thinking of man (Ibid., p. 18).

In its epistemological aspect dialectic materialism is realistic. The objective world is considered as existing independently from the cognizing consciousness (Ibid., p. 11). The consciousness receives information about the objective world by reflecting it (Ibid.). Soviet philosophers and psychologists speak about Lenin's theory of reflection. Lenin actually never formulated systematically such a theory. It is derived from some jottings Lenin made on the margins of a conspectus on Hegel's philosophy (1961c). But it is true that Lenin's concept of cognition through reflection has a more creative and activistic character than that of his Marxist predecessors. Engels' task was to invert Hegel's idea that reality is a reflection of the dialectics of ideas (Hegel, 1957). With Engels the dialectic thinking was "only a reflection of the movement through opposites reigning in nature" (Engels, 1961, p. 526). But with Lenin "man's consciousness not only reflects the objective world, but creates it" (1961c, p. 212), and for Lenin "truth is a process" (Ibid., p. 201). Such a concept of reflection is quite different from that of Sechenov. For Sechenov

reflection in the brain was a faithful mirroring of the reality, to the extent that even "mental abstractions" mirrored directly the objective world (1960, p. 342). Lenin preserves the epistemological realism of the dialectic materialism. But he conceives the phenomenon of reflection neither as passive, nor as achieving an exact copy of the objective world. "It is not simple, not a complete reflection, but the process of a series of abstractions, the formation and development of concepts, laws, and so forth . . . (which) embrace conditionally, approximately the universal law-governed character of eternally moving and developing nature. . . . Man cannot comprehend = reflect = mirror nature as a whole . . . he can only eternally come closer to this, creating abstractions, concepts, laws, a scientific picture of the world, etc, etc." (1961c, p. 182). Lenin stressed the active nature of cognition. "From subjective idea man advances towards objective truth through practice (and technique), . . . by checking and applying the correctness . . . of the reflections in the brain . . . in his practice and technique man arrives at objective truth (Ibid., p. 201). Cognition has also practical results, "consciousness is formed through practical activity in order in its turn to influence this activity . . . revealing itself in a goal-directed action" (Spirkin, 1964, p. 105). Such an action produces new, socially important results . . . . creativity is a characteristic of the consciousness" (Ibid., p. 116).

The approximate, gradual approaching of cognition to reality was expressed already by Engels (1961, pp. 639-640), but the action element is stronger in Lenin's views.

It is in agreement with dialectic tenets that Soviet thinkers never arrive at final viewpoints. "In general the Soviet philosopher feels that his philosophy is complete, but not a completed world view. It is systematically worked out, but it is not . . . a closed system" (Somerville, 1946, p. 151). Constantly new findings of science are being incorporated as a part of "Marxist" theory. Cybernetics and computer modelling of mental activity are such recent incorporations (Spirkin, 1969). The result is a large-scale eclecticism. Spirkin's Course of Marxist Philosophy in which Goethe, Pavlov, Vygotski, Lenin, and Einstein are quoted side-by-side, is a typical example of such an eclecticism.

As a result of this eclecticism it is difficult to separate the ideas of an individual Marxist authority out of the snowballing agglomeration of ideas, which at present constitute the Marxist theory. Marxism was eclectic from the very beginning. It is already a considerable task to separate the elements of Hegelian idealism from influences of materialistic theories in Engels' writings. In Lenin's case the task is much more complex if we want to distinguish the elements of Hegelian or Engelsian ideas, or those of Russian utopian socialists like Herzen, or later interpreters of Marxism like Kautzki; or Lenin's ideas which arose

"dialectically" in polemical writings, against positivists like Mach, or moderate socialists like Plekhanov and others. The closer to the present the more cross influences there are in Marxist theory. A statement of Marxist theory of 1962 is not the same as that of 1952, still less so as that of 1922.

For the purpose of finding interrelations between philosophical and psychological ideas in the Soviet Union it is not important to unravel all this complexity. It was not a case of psychologists being influenced by single individual writers, but the case of a stream of converging influences reinforcing each other. Particularly in the case of Vygotski, considering his extensive erudition, it is not very meaningful to try to trace the influence of individual writers. Until more materials on Vygotski will become available, we cannot be quite sure whether Engels' or Dilthey, Lenin or Bergson, Marx or Goethe, Chelpanov or Piaget, or others had the predominant influence on Vygotski's thinking. It is more to the point to say that ideas of the Marxist dialectic materialism fitted easily into the framework of philosophical ideas current in nineteenth and twentieth century Europe, and that Vygotski and Vygotskians set up psychological principles which do not disagree with Marxist principles. But their psychological ideas in turn influenced Marxism. We are told (Smirnov, 1957) that Vygotski and others tried deliberately to place psychology on a

foundation of Marxism. But we also find that books on Marxism like Spirkin's (1964) use acknowledged and unacknowledged quotations from Vygotski in presenting Marxist theory. Thus we observe a true "mutual interaction."

Dialectic Psychology

"During the twenties the Marxist ideology appears to have functioned primarily as a screening device whereby certain schools of psychology were rejected as clearly unacceptable. Beyond that . . . psychologists were more interested in demonstrating that their own brands of psychology were consonant with the principles of Marxism than in constructing a psychology which would best exemplify these principles" (Bauer 1952 ~~Ibid~~., p. 62). By the results of the reformulation of Soviet psychology it seems that it would be more precise to describe the process as a true "mutual interaction" between psychology and Marxist dogmas.

In cases where the personality of the psychologist was strong, like Vygotski's, the psychologist predominated. The position of the Vygotski group in Moscow became strong for two reasons. First, Marxism had not to be imposed on them forcibly, because they had been Marxists before. Materialism, paradoxically, has had an aura of romanticism for Russians. For more than a century it had been a persecuted tenet, thus to embrace materialism was connected with a feeling of liberation. Also some of the nineteenth century materialists had been dedicated persons who selflessly

tried to reduce the misery of the Russian people under an autocratic government, and so aroused admiration. The spirit of Hegelian dialectics had been long in the air. Also the fight against the tsarist regime had been glorified for many years. As a result of all this many psychologists, like Kornilov, greeted the Marxist revolution "with an exceptional enthusiasm" (1957).

The other point of strength of the Moscow group was that they were well grounded in psychology, whereas the authorities were grounded only in Lenin's writings (highly polemical journalistic articles). So the psychologists were, initially, left without interference, because on the one hand, they were not politically suspect; and on the other hand, they alone were the experts. R. Bauer writes that the Moscow psychologists were "part of the European and American tradition of psychology . . . Vygotski and Luriya were influenced by the work of Heinz Werner and the German Gestaltists, and to a lesser extent by American behaviorism" (1957, p. 59). This statement is only partially true. First, it was not the case of being influenced by a single psychological school. Vygotski's writings reveal an extensive knowledge of Western psychology of any schools. Also he showed a selective and often critical attitude to the psychological ideas of others (Kolbanovski, 1956; Vygotski, 1929, 1956). For example, one of the features of Western psychological schools which Vygotski criticized was

their tendency to generalize a chance discovery, however important that discovery be in itself, and to present it as a universal explanation of all mental life. With Freudians sex is used as such a universal explanation and has acquired a metaphysical character, with reflexologists the reflex, with gestaltists the perceptual configuration, and so on. Vygotski stressed the need for genuine general principles in psychology which would be able to explain mental activity in all its complexity (Kolbanovski, 1956).

Second, Bauer does not take into consideration Russia's own psychological contributions. For example, Vygotski's predominant interest for the relation between speech and thought had Russian antecedents since the sixteenth century, and the concept "inner speech" to which Vygotski gave much thought (1956), was discussed already by I. Giesel of the Kiyev Academy (Sokolov, 1963). Thus this interest had not been due solely to the influence of H.Werner. It is true that Vygotski admired Werner (1956), and probably was acquainted with W. Humboldt's work directly, not only through Werner. There are in Vygotski's writings echoes of such Humboldt's statements as "language is deeply interwoven with the mental development of humanity," and "originally everything is inside man, the perception . . . the thought . . . the speech and the act" (1836, pp. XX, XXI). But, for example, Vygotski would not have used such an expression as "speech is an involuntary emanation of the spirit" (Ibid.). Werner in later years stated that Vygotski's conception of

"egocentric speech" was based on a misconstruction of Piaget's corresponding concept (Werner and Kaplan, 1963). It was a misconstruction, as Piaget (1956b), later explained to Vygotski's successors. But just as well we could say that Vygotski's concept was misconstrued by others. As the bulk of Vygotski's writings is still unobtainable in the West, we cannot form an opinion on how well Vygotski succeeded in the pursuit of his goal to formulate general ~~basic~~ principles as a basis of a comprehensive science of psychology. We may assume that during his short life he did not travel far on the path towards this goal. But he was alert to any novel psychological idea appearing in any country and sought stimulation from them. Bauer's statement about Moscow psychologists being influenced by Western psychology (1957, p. 59) could be rephrased to say that Moscow psychologists were up-to-date in the knowledge of international psychology and their thinking was not significantly different from that of Western psychologists. Vygotski (1929, 1956) seems to have been attracted most by Gestalt psychology, by Piaget's developmental psychology (at a time when Piaget was still considered an obscure psychologist), and by Personality psychology. He criticized all these schools to some extent (1956), but he seems to have considered them the closest to the thinking on which he wanted to base his psychology, namely the dialectical thinking (Kolbanovski, 1956).

The first step Vygotski took towards the establishment

of a dialectical psychology was to take a bold stand against "psychology without consciousness" (Smirnov, 1957, p. 13). In the first post-revolutionary years there had been an uncertainty whether the term consciousness could be accepted on the basis of materialistic principles. Even Kornilov, who "fought for the very existence of psychology" (Borovski, 1929) had not dared to go beyond the term "reactions." But Vygotski was unafraid to state that reflexes and nervous processes cannot exhaustively explain human behaviour. To construct a psychology without a mind, he declared, is nothing but a body-mind dualism turned inside out. If we speak about physiological processes alone without accompanying mental processes, we give the physiological phenomena a separate existence, a metaphysical entity (Smirnov, 1957, p. 13). There was nothing in the Marxist theory to prevent acknowledging a qualitative difference between matter and mind. On the contrary, both Engels and Lenin stressed this difference (Lenin, 1961a, Engels, 1961) and regarded consciousness as the function of the most highly organized matter (*Ibid*.). Psychologists gathered eagerly around the banner of reinstated consciousness. By the 1930's it became an official tenet that "Soviet psychology has explicitly fostered the theory that consciousness is the highest, most specifically human level of development of the psyche" (Bauer, 1952, p. 132). The pendulum swung in the opposite direction, and the term "unconscious" was

now often connected with "bourgeois" psychology, the term "preconscious" was preferred (Pedagogicheski Slovar'; Bauer, 1962, p. 82).

Next the elaboration of the dialectical principle began. Hegel's concept of dialectics is easy to translate into psychological terms. For example, Hegel states that, just as one system of philosophical ideas will refute another and make the former highest system of ideas into a subordinate one, so this refutation will occur in the case of any development, ". . . the growing tree is a refutation of the seed; the blossom seems to be the highest, truest existence of the tree. But the fruit will refute the blossom. The fruit, which is the last, contains everything that preceded it, all the forces that were developed before" (Hegel, 1957, p. 127).

This simile, translated into psychological terms, becomes developmental psychology. The "existences" may be translated as age levels having different characteristics, seemingly refuting each other. "All the forces" may be translated as all past experience snowballing, according to a Bergsonian model, and shaping the personality of the growing human being. It was as developmental psychologists that the eager group around Vygotski began to work. Phases, stages, and substages in the child's mental development were determined. Children were studied from year to year starting with as young as two years old (Luriya, 1931). Series of

original experiments were devised to find age differences in behaviour, in thinking, in reacting to experimental conditions, in the style of solving problems, and so on. They went further and analyzed single mental processes phase by phase. Lenin's dictum that "thoughts are not dead, without movement or contradiction, but a ceaseless movement, a process of contradictions arising and being solved" (1961c, p. 195) gave a sanction for the study of thought processes and concept formation. Vygotski invented the "Vygotski blocks" and, using them in experiments, found that concepts do not grow through a quantitative increase of associative connections, but through changes in the methods of attacking perceptual material, through "qualitative formations," resulting in an increasing structural complexity from stage to stage; and at each stage a working over of the achievements gained at a previous stage took place (Vygotski, 1956, p. 160ff). Similar "functional and genetic (that is, developmental) analysis" (Ibid., p. 185) was applied to children's reasoning processes. New experimental apparatus was being invented, new experimental methods tried out. Cognitive processes received central attention in all experimentation.

Another useful dialectic principle proved to be that of "mutual interaction." It formed the basis of a theory of cognition, in which subject and object both are active partners, and the basis of the theory that the child's activity

is the most important factor in the development of both the perception and the thinking of the child (Zaporozhets, 1962a, and 1964a). The principle of mutual interaction permitted a very active and dynamic concept of the human mind. It also allowed conceiving the human personality as an individual whole, in which all mental processes are interacting, interrelated. This led to the study of personality. And the individual was also seen in interaction with the society. This led to the study of "man as social being" (Spirkin, 1964) and to the great emphasis given to education as a factor in human development.

Thus Marxist tenets were used to justify the elaboration and further development of psychological procedures adopted earlier in European psychology.

Cultural Historicism

Another aspect of Marxist theory is historical materialism. This is defined as "methodological science which studies society and life in society as an integral process, and the interrelations of all its aspects" (*Filosofskaya Entsiklopediya* II). Emphasis on social factors was moreover obvious in the young Soviet Union where a new society was to be built. Besides, Russian literature had since the nineteenth century promulgated the view that human character is determined by social environment. All these facts gave Vygotski the green light for an introduction of a

rather Diltheyan philosophy of mental development, the theory of "cultural heritage."

By this theory all mental development is determined by experience. But there are three types of experience: (1) the experience of the species, hereditarily fixated in the organization of the nervous system and expressing itself as automatic reflexes and instincts; (2) individual experience, taking the form of adaptation to given external conditions, to objective situations; and (3) social experience, which is fixated in the products of the material and spiritual culture of mankind and transmitted through contacts between human individuals. Animals possess only the first two types of experience, whereas the human child cannot develop without the influence of social experience (Zaporozhets, 1963; 1964a).

There is a striking similarity between this theory and W. Dilthey's statement on the three factors of mental development: physical maturation, influence of the physical environment, and the influence of the spiritual environment (Dilthey, 1954, p. 214).

By Vygotski's theory mere maturation of the nervous system gives the child a premise for development, but does not enable the child to develop in a specifically human way. This is determined by social, cultural influences, and takes place in the form of an absorption of the cultural heritage of the immediate society, and of whole mankind. Even the world of objects can transmit this heritage. A child can

explore objects on his own. But when he learns from an adult, through imitation, or through verbal instruction, how to handle a simple tool, or what is the function of an everyday utensil, he achieves a short-cut in his exploration and learns the functional meaning of objects laid into them through the experience and creativity of mankind (Zaporozhets, 1960a; Smirnov, 1957). Still more the child learns through social influence about ways of behaviour, cognitive and executive. In the beginning the child's contact with adults (parents, later educators) has the greatest influence on the child's development. Later contacts with peers can influence him. Language is the product of human civilization, which is the most effective tool for transmitting the social heritage. The child can learn even the control of muscular movements best through verbal instruction. In the beginning the child follows verbal directions given by the adult. Later he becomes able to control and organize his own movements with the help of loud speech giving directions to himself (loud speech for Vygotski was not "egocentric" as it was for Piaget, but, on the contrary, a sign that the child absorbs social influence (1956). Finally, the child completely internalizes the adult's instruction, giving directions to himself in an inaudible "inner speech," thus becoming an autonomously acting being (Ibid., Zaporozhets, 1960a).

The Vygotski group now began an intensive study of all social interactions of the child with parents, other adults,

and other children. The role of verbal instructions and the process of their internalizing was given the foremost attention.

In connection with this emphasis the psychologists stressed the role of organized education in development. Against the two-factor theory (heredity and environment) Soviet psychologists set up a three-factor theory: the child's development is determined by (1) innate, but changeable, physiologically determined dispositions, (2) the influence of the social environment, transmitting cultural heritage, and (3) education, a deliberate influencing of the child by giving him short-cuts to the acquisition of culture, and thereby also forming in the child new abilities (Ibid.).

In the work of the Vygotski group the cultural and developmental views of the child's mind were inseparable. The same "functional-developmental-analytical" method was applied to the study of the child's perception, thinking, physical development, artistic abilities, social behaviour, and other developmental aspects.

Pavlovianism

R. Bauer states that in the 1930's Pavlov's "work became progressively more clearly defined as physiology" (1952, p. 118). This may be true from the standpoint of an outsider. For Pavlov himself these were years when he became increasingly interested in psychology and psychiatry

(Pavlov, 1941), and also when psychologists became interested in him (Luriya, 1928). Pavlov became aware that he himself had contributed something to psychology, and that psychological research had greatly changed during his long life. Then there occurred "a change in Pavlov's attitude towards psychology, though not, of course, toward the metaphysical version which he continued to castigate until his death" (Wells, 1956, p. 69). It would be more exact to say that Pavlov was laying the ghosts of a "metaphysical" psychology, which by that time was non-existent in Russia. (In the Soviet usage the word "metaphysical" is approximately synonymous with "spiritualistic," or even "supernatural." In the usual philosophical meaning of the word Soviet psychologists themselves are metaphysical, because they base psychological principles on a philosophical explanation of all existent).

In 1932, four years before his death, Pavlov wrote: "Now that I appear for the first time in the psychological literature . . ." (1932, p. 122); he had begun to trust himself among psychologists. He then took the opportunity to tell the psychologists that "man is a system--roughly speaking, a machine--like every other system in nature, subject to the unescapable and uniform laws of all nature; but the human system . . . is unique in being most highly selfregulatory . . . self-maintaining, repairing, readjusting, and even improving. [Higher nervous activity] has immense possibilities: nothing remains stationary,

unyielding; and everything could always be attained, all could be changed for the better, were only the appropriate conditions realized" (Ibid., p. 126-127).

This admitting that "nothing is stationary, unyielding" created a bridge between Pavlov and the dialectic psychologists. Whereas in the first post-revolutionary years Marxist psychologists did not sufficiently value Pavlov, ignored him, but by the end of the 1920's they turned their attention more and more to Pavlov (Smirnov, 1957, p. 15).

It took Pavlov a longer time to make peace with the Marxist politicians. He was openly anti-communist. Both as a former student of a theological seminary (Wells, 1956) and as a dedicated scientist he found nothing to admire in the communist state. Still in 1924 he declared that "he would not give a frog's leg for the social (bolshevist) experiment" (Pavlov, 1941, p. 33). And this notwithstanding the fact that the Soviet government showered him with presents and privileges, they wanted very much to have a prominent scientist within their ranks. Only by 1930, when Pavlov was installed in the Koltushi laboratory, specially built for him by the government, did he change his attitude, saying facetiously that "his heart could no longer stand the strain of extreme outbursts of rage" (Ibid., p. 32).

It was during his last relenting years that Pavlov began to surround himself by his admirers and share with them his more special ideas at the so-called "Pavlov's

Wednesdays." It was then that the eager disciples picked up scraps of psychological information with which they built a systematic Pavlovian psychology, of information which for Pavlov was only marginal. Later the same eagerly built Pavlovianism became a strait-jacket to Soviet psychologists, but they did not know it at the time.

It was in the 1930's that Pavlov began to discuss the "second signal system," the "signals of signals." The Moscow group, whose central interest was the role of language in development, at once treated this term as synonymous with speech (Bauer, 1952, p. 11).

Another Pavlovian term which could be usefully applied in experimental research was the "orienting reflex." The study of cognition and of the psychological determination of human actions could be fitted under this title. Pavlov did not deny the subjective psychological aspect of voluntary movements (Zaporozhets, 1960a, p. 32).

Pavlov was also far from denying consciousness. Pavlov's view that nothing in a living organism remains stationary (1932), and his emphasis on activity as opposed to passivity, agreed well with a dialectic view of life and with the developmental principle in psychology. Pavlov was interpreted even as speaking of the creative aspect of a reflex act (Zaporozhets, 1963, p. 186). It was possible to fit Pavlovian and Marxist psychology together.

But in the early 1930's psychologists did not yet

contemplate seriously the integration of the two systems. In 1928 Luriya wrote, "Psychologists as a rule share the objective position of the physiologists, but they carry on their work on a much broader basis" (1928). The Marxist psychologists were still free and proud of having built up a new system of psychological principles.

G. Razran, who visited the USSR in 1934, reported in an over-enthusiastic way that "until a very few years ago dialectic psychology was largely theoretical . . . (but) this has changed now. Dialectical psychology has become a complete, independent, all-embracing system, with a unique selection of problems and appropriate techniques and methods" (Razran, 1935, p. 23). S. Rubinstein stated in 1944 that "the war found Soviet psychology theoretically mature and prepared to solve new problems" (1944, p. 184).

Whether the psychologists were mature or not, fate had for them in store a very long incubation period of nearly twenty years. The autocratic Soviet government, then at the crest of a purge wave, at last caught up with the psychologists, and gave them the long-delayed blow.

PERIOD OF WAR AND CONFORMITY

The 1936 Ordinance

Accounts of the history of Soviet psychology, be they Soviet or non-Soviet, eventually arrive at the date 1936, when the resolution of the Central Committee of the Bolshevist

Party "on the pedological perversions in the systems of the People's Commissars of Education" was passed (Bauer, 1952; 1962; London, 1949; Pedagogicheskaya Entsiklopediya; Smirnov, 1957; Zaporozhets, 1960a).

Blonski belonged to the Commissariat. Blonski was also the leading pedologist. In 1928 Luriya had proudly stated "Professor Blonski's 'Pedology" . . . has undoubtedly played an important part in the development of science of the child in Russia" (London, 1949). In 1928 Lenin's widow, Krupskaya, had addressed a conference on Pedology and had stressed its importance (Bauer, 1952, p. 65). Razran, after his 1934 visit to the Soviet Union, wrote that "vocational testing, psychotechnics, and industrial psychology . . . are not only highly advanced in the Soviet Union, but rapidly embracing more and wider fields for research and application. American psychologists may indeed envy their Soviet colleagues" (1935). Now, in 1936, the ordinance accused pedologists of pseudo-scientific practices "in the form of harmful and senseless questionnaires, tests, and so on" (Bauer, 1952, p. 123), of harbouring reactionary ideas and of discriminating against workers' children (Pedagogicheski Slovar' II, p.114). Three decades later the opinion is milder, but still critical: "the errors were connected with an uncritical use of idealistic and mechanistic ideas from abroad." A. Mintz remarks scathingly that "judging by a sample of 'pedological' literature (Blonski, 1925) these objections

. . . are actually fair criticism of Russian pedology" (Bauer, 1962, p. 4).

Probably several factors may have determined the decree. The weakness of the "pedological" and "psychotechnical" testing practices may have been one (Zaporozhets, 1964b). The breaking down of the initial Soviet "spontaneous education" (Bauer, 1952, p. 44) may have been another. But it is possible that one reason behind the decree was the consolidation of the government's power in the course of carrying out the five-year plans (Ibid.) and of preparations for the war. For both purposes a total (and totalitarian) mobilization of the population resources was needed. The testing system seemed to be too intent on excusing some persons from doing their utmost for the sake of the state. Also a spirit of extreme chauvinism arose in Russia before the war. Any idea coming from abroad became doubly suspect: as bourgeois and as foreign. The psychologists were allowed too long to have unrestricted access to foreign literature.

The direct result of the ordinance was a complete ban on questionnaires, testing, and, especially, intelligence testing. The other direct result was the dismissal of all psychologists who had ever used the term "pedology" in their works.

It is interesting to note that there has been no known case of a bodily "liquidation" of a psychologist. R. Bauer mentions that Spielrein was sent into exile in

1935 as a Trotskyist, but even in exile he continued psychological work (1952). Most of all affected were Blonski and Kornilov (Vygotski died two years before the decree). But after an initial retirement, and recanting, they were reinstalled in psychological work (Kornilov, 1957). In 1938 Kornilov was again elected president of the Psychological Institute. In the 1950's a rehabilitation of the former pedologists followed. In current periodicals they all have been eulogized: "Blonski--one of the most outstanding great psychologists" (Voprosy Psikhologii, 1964-3); "Kornilov--one of the great psychologists" (Ibid., 1957-4); "Vygotski--the greatest Soviet psychologist" (Doshkol'noye Vospitaniye, 1966-1). Their only punishment is the constant reiteration of their "pedological aberrations."

But much more serious was the indirect result: psychology became tabu. Though psychologists continued to work, they became isolated, ignored, and their existence was denied officially.

> The writer knows this from personal experience. The writer was studying at a university which, in 1940, was taken over by Soviet powers. The teaching of psychology at that university was not directly forbidden. But as the chair of psychology was a part of the philosophy department, and philosophy became a strictly forbidden subject, teaching of psychology remained in abeyance. Students then persistently asked the newly-arrived Soviet professors of Marxism (who were clearly stated to represent the official opinion) about the status of psychology in the Soviet Union. The answer was: there is no psychology in the Union. The reasoning was startingly primitive:

> psychology means the study of the soul, and Marxism teaches that man has no soul; so there is no need for psychology. On further questioning the students were informed that in 1938 a decree was passed which allowed teaching of psychology in teacher training institutions, but nowhere else. Only one psychology textbook was brought in from Russia (it was S. Rubinstein's *The Foundations of Psychology*). Further questioning only aroused irritation. The impression was that psychology was regarded as a too reactionary subject to be talked about. Not a word was said about Kornilov, Vygotski, Luriya, or any other Soviet psychologist, as if there never had been any psychological research in the Soviet Union. At the same time the Soviet professors constantly boasted about achievements in other Soviet sciences, such as biology, engineering, and so on.

War Time Activities

The psychologists were "mature and prepared to solve new problems" (Rubinstein, 1944). War time work gave them an opportunity to show this. The work was entirely physiological and physiotherapeutic. But the psychologists did not miss the opportunity to give attention also to psychological problems. After the war they used their war time experience for psychological work, elaborating the physiological data from a psychological standpoint (just like K. Goldstein in the West did it after World War I).

Luriya is said to have initiated this work (Leontiev, 1945; 1965). Later, S. Rubinstein (1889-1960) became one of the organizers of the psychologists' war effort (Ananiev, 1948; Rubinstein, 1944). The work concerned mainly treatment

of wounded soldiers, cases of brain injuries, motor dysfunctions, and so on. Other war problems were also studied, as counteracting searchlight glare and snow-blindness, sensitizing hearing and sight, and so on. A. R. Luriya (1902-) was installed in a laboratory in the Cheliabinsk district. He studied brain lesions and functional compensation using which the wounded could be re-educated and new functional systems created to enable the wounded to work. A. N. Leontiev (1903-) was installed in a rehabilitation hospital in the Sverdlovsk district (both districts are east of the Ural Mountains) and, with the assistance of A. V. Zaporozhets, studied peripheral cases, mainly the restoration of the motor function in an injured arm or hand. B. G. Ananiev (1907-) studied cases of air contusion and the relation between optico-spatial disorganization and verbal blindness. D. N. Uznadze (1886-1950) and his group of Georgian psychologists, also A. Kolodnaya, Kogan, and many other psychologists conducted similar work (Rubinstein, 1944).

PERIOD OF CONFORMITY

The war effort probably rehabilitated the psychologists in the eyes of the government. Nevertheless the hold of the government and the Bolshevist Party on psychological research became increasingly firmer after the war. In 1946 a decree by the Central Committee of the Party was passed which objected to the supposedly "exaggerated reliance of

Soviet scientists on foreign sources, and the failure to credit Russian scientists sufficiently" (Bauer, 1962, p. 5). The result was that Soviet psychologists stopped quoting foreign language sources and tried to trace all views and achievements to Russian beginnings (Bauer, 1952, p. 153). (The only exceptions were, of course, Marx and Engels). Scientists were repeatedly accused of deviating from the official line and of inefficiency (Ibid.). It is not known whether there was any decree admonishing psychologists to adhere to Pavlov's theory, but internal evidence (see Part II, 4), shows that the pressure for adopting Pavlovianism was great. Psychological publications began to dwindle (see Table II), especially those of non-physiological content. There were no psychological periodicals between 1935 and 1955 (Bauer, 1962, p. 3). Discussion of educational problems was permitted, and, as Leontiev said, "psychology became a psychological study of educational processes" (Bauer, 1952, p. 158), besides being a psychological study of physiological processes. Even psychology textbooks were not printed. In 1955, after the "thaw" a reviewer wrote, "with interest and joy one opens a new textbook on psychology. . . . Such books have not been published for many years" (Syrkina, 1955, p. 105).

Not only conformity, but also pride in conformity was expected of Soviet psychologists. B. G. Ananiev gave a sample of such an attitude when he stated in 1945 that

"Soviet psychology is the first in the whole history of psychology to have attained theoretical unity, a wholeness of psychological theory formulated on the basis of Marxist-Leninist philosophy" (London, 1949, p. 266).

Then in 1953 the "thaw" came. The rich flow of psychological publications since 1953 is an indication of the freedom the psychologists gained. In the beginning there were only indirect references to the conformity period of 1936-1953. For example, A. A. Smirnov, writing in 1955, emphasized that in the last two years psychology, like all sciences, had made remarkable progress (1955). In the 1960's already direct references appear to the cramping effect of the bygone restrictions. "The cult of Stalin's personality fettered creative initiative, engendered dogmatism, gave no possibility to analyze focal problems" (Shorokhova, Mansurov, and Platonov, 1963, p. 73). The same article states that in Stalin's time too great emphasis was given to physiological aspects of psychology.

Not many Soviet psychologists have expressed themselves so openly against Stalinistic oppression. If cautiousness is the reason of such silence, then judging by the reports of the daily press (for example, Calgary Herald, January 16, 1967) such caution is justified: the official attitude to Stalin seems to be wavering in the Soviet Union. Stalin is still too close in time, to the Soviet people as well as to the West. Any objective evaluation of his personality and of his influence on the

direction of psychological research is not yet possible, especially for a person who has had the personal experience of living under Stalin's reign.

The only way in which some of those Soviet psychologists who were not originally Pavlovian have reacted since the "thaw", is by abandoning gradually Pavlovian terminology and Pavlovian principles. In the 1950's Soviet psychological writings were still predominantly Pavlovian. But gradually the Pavlovian restrictions were shaken off and a ramification of interests took place. An illustration of the change in interests and in the choice of psychological study fields will be found in Table I, page 76.

CONTEMPORARY SOVIET PSYCHOLOGY

Extent and Fields of Research

In 1957, when the expansion of Soviet psychological research had just begun, A. A. Smirnov (1957) named the following psychological research areas:

Cognitive field: sensory reception (visual, auditory, tactile, taste and smell, proprioceptive sensation, optical nerve processes, and so on), perception (space, depth, constance of perception, complex perception, and so on), orienting activity, memory (visual, musical, verbal, meaningful, and so on), thinking (concept formation, thinking processes, understanding science structure, and so on), art and literature appreciation, speech (speech physiology,

TABLE I

TOPICS OF ARTICLES AND REVIEWS IN "VOPROSY PSIKHOLOGII" 1955 AND 1965 (SIX ISSUES EACH YEAR)

	Number of Articles	
	1955	1965
General psychology	8	8
Biographies, obituaries	7	8
of these on Sechenov and Pavlov only	5	-
Neurophysiology	8	5
Conditioned reflexes	8	4
Motor activity, general	3	2
Senses	3	6
Perception	2	10
Thinking and problem solving	2	7
Memory	1	2
Attention	-	1
Emotions	2	3
Personality	2	1
General education	2	4
Teaching of language	5	4
Set	2	2
Occupational psychology	1	8
Animal psychology	1	-
Sensory deprivation	-	1
Information theory and use of computer model	-	7
Cybernetics	-	2
Concept of probability	-	3
Psychology of art	-	4
Creativity	-	2
Child activity and collective behaviour	-	3
Stuttering	-	1
Hypnopedia	-	3
Motor activity of sportsmen	-	4
Forensic psychology	-	1
Teaching foreign languages	-	2
Teaching psychology	4	2
Experimental apparatus and methods	6	8
Reviews of the work of psychological institutions and conferences	13	11
Reviews of foreign psychological literature		
(a) of communist countries and of sympathizers	6	-
(b) of non-communist countries	-	6
	86	135

speech and action, inderstanding verbal expressions, learning phonetics, and so on).

Noncognitive fields: motives, needs interests, emotions, temperamental typology, character, abilities, giftedness, set.

Child psychology: developmental characteristics, volitional traits, learning, play, ethical upbringing, moral behaviour habits.

Physiological research, occupational psychology, defective and pathopsychology, history of psychology and animal psychology (from experiments with animals Soviet psychologists do not make conclusions concerning human beings).

Smirnov listed over two hundred names of psychologists working in these fields (not counting numerous "etceteras") (1957).

Table I gives some indication of the many new research areas, which have been opened since Smirnov's report. Not all new areas appear in the table. For example, there is a growing interest for social psychology, until now a completely neglected area (Shorokhova, Mansurov, and Platonov, 1963). Also within existing areas new objects of study appear. For example, in occupational psychology such novel occupations are studied as that of a cosmonaut, of a computer card puncher, and so on. In didactical psychology concepts like algorythms, phonemes, graphemes

are used (Voprosy Psikhologii, 1965-1966). The group of United States psychologists who visited Soviet research centres in 1960, reported, among numerous research areas, such new fields as encephalography, cybernetics, applying computer models in psychological theory, and so forth. In some areas, like studying principles of programmed learning, Soviet psychologists claim that they have developed these fields without a knowledge of the work done in the West (Bauer, 1962, p. 47).

The most important Soviet centre directing Soviet psychological research is the APN RSFSR (Academy of Pedagogical Sciences of the Russian Federation of Soviet Socialist Republics) in Moscow. With it are connected research institutes, such as the Institute of Psychology, of Defectology, of Preschool Education, of Industrial Education, and others. It issues reports (doklady) and publishes in book form studies of its members and workers at the institutes. It publishes the main Soviet periodical Voprosy Psikhologii (Problems of Psychology) in which articles by psychologists from all over the Soviet Union appear.

Among numerous psychological books that have been published in the late 1950's and in the 1960's, a new venture deserves mentioning. It is the publishing of twin encyclopedias, of Education (Pedagogicheskaya Entsiklopediya) and of Philosophy (Filosofskaya Entsiklopediya). In

the Soviet Union encyclopedias are not only books of reference, but also a guage of official viewpoints. Interesting in the two new encyclopedias is the comprehensive way in which non-Marxist theories, achievements, and personalities are discussed. Thus I.Kant's philosophy has been given just as many pages as Lenin's. Everything from Indian philosophy, to Jesuits' educational merits, to Maritain's views is discussed. Occasionally a theory is described as bourgeois, or reactionary, but it still receives extensive coverage.

Schools of Thought in Soviet Psychology

In contrast to the absolute conformity of the 1940's Soviet psychologists now admit that there are differences in trends between different psychological centres (Bauer, 1962, p. 192). The "personality cult" seems to be endemic with Russians, including psychologists. So there are three personalities "culted" in Soviet psychology: Pavlov, Vygotski, and Uznadze.

Pavlov is the patron of Leningrad, consequently main work done in Leningrad is of neuro-physiological character, and the main Leningrad research centre is the Pavlov Institute (however, Moscow has also a large centre for studies of higher nervous activity). Leningrad has also prominent psychologists, like B. G. Ananiev, but their work emphasizes mainly sensory development, and associations (Samarin).

Pavlovianism in contemporary Soviet psychology "has not remained without progress" (Voprosy Psikhologii, 1966-6, p. 4). Research has revealed that conditioned reflexes are not unchangeable, but depend upon the life conditions of an animal. This finding has led to the development, by A. D. Slonin and others, of a new branch of physiology, the ecological physiology (Ibid.). It was found also that the concept of the brain as a selfregulating system adopted by Pavlov in his last years links well into the new discipline of cybernetics. P. K. Anokhin and N. A. Bernstein have suggested that the "Cartesian" term reflex arc used by Sechenov and Pavlov is inadequate for expressing the complexity of animal behaviour. They suggest a better term, the reflex cycle, consisting of the stimulus, the working out of a behaviour program, the reaction, the feedback, and the correction of behaviour (Ibid., p. 5).

Uznadze, the Georgian, is patron of Tbilisi, Georgia. Consequently, the Tbilisians study only set as Uznadze did. Their experiments are of the type of discrimination studies, and result in the discovery of various sensory illusions. But the Georgians generalize set to such an extent that they explain the whole personality through it.

Vygotski remains patron of Moscow psychologists. Thus they are mainly developmental psychologists, and put emphasis on child study and on the study of higher

intellectual processes. Vygotski's former co-workers, Luriya and Leontiev are still the leading figures in Moscow, and most of the older Moscow psychologists have had personal contact with Vygotski, as had Zaporozhets. Though the trend towards educational psychology is still strong, the main aim of Moscow psychologists is to make psychology into a distinctive discipline.

Ukrainians have not a "personality" of their own (not counting such early ones like Skovoroda). They follow the same trends as the Moscovites. Presumably the reason for this is that there has been a constant shuttling of psychologists between Moscow, Kiyev, and Kharkov Universities. Many of the Moscow psychologists are actually Ukrainians, as are Galperin, Zaporozhets, and others.

There is no strict isolation between the groups. The most self-contained are the Georgians. An outsider may suspect them of national isolationism. But set is discussed also by Pavlovians and Vygotskians in their works, and on the pages of *Voprosy Psikhologii* the three schools are represented side by side.

But occasionally some arguments are raised against other schools, especially from the side of the Leningraders. Thus Ananiev (1948) otherwise admiring Vygotski reprimands him for a one-sided rationalism (1960, p. 358). Y. A. Samarin criticizes Zaporozhets very severely for not having given an important place to associations in his textbook of psychology

and accuses him of deviating from materialism (1957). Still more severely Samarin criticizes P. Y. Galperin (1959). Galperin has applied a rather subtle, somewhat Wuerzburg style, analysis to thought processes, and has distinguished an imageless, non-verbal stage in them(1957). Samarin perceived in this a clear deviation from orthodoxy. Though Galperin is orthodox enough to use the Pavlovian term orienting reflex, is dialectic enough to stress the activistic aspect of thinking, and Leninistic to the extent of acknowledging an epistemological realism (Ibid.), Samarin accuses him of perverting Lenin's theory of reflection, and trailing dangerously towards a psychology of the unconscious. Marxist-Pavlovian psychology regards only automated habits as unconscious, that is, the lowest level of mental activity. And now, exclaims Samarin (1959), Galperin has called unconscious the highest mental ability, the intellect!

Such arguments may be symptoms of a growing divergence. But it is possible that the different Soviet psychological schools may continue to develop side-by-side without getting into serious controversies.

Among all the changes that have occurred in Soviet psychology since 1953 the most remarkable still is the comeback of Vygotski. The most recent series of articles on Vygotski has been published on the occasion of his seventieth birthday (Voprosy Psikhologii, 1966-6, pp. 13-61),

also another article by Vygotski was reprinted (Ibid., pp. 62-76). It is interesting to contrast the Vygotskian revival with the contemporary Soviet Pavlovianism. Whereas Pavlov has been repeatedly reinterpreted and Pavlovian research has taken paths unforeseen by Pavlov, Vygotski is still quoted from his original writings without reinterpretation. It seems that the fount of Vygotski's ideas is not exhausted yet. Though Vygotski wrote at a time when psychological research was less developed, his ideas seem to impress Soviet psychologists with their undiminshed freshness and significance.

Basic Principles of Soviet Psychology

At present, officially, the Soviet psychologists still form a homogeneous group, working on the basis of identical principles. Therefore A. A. Smirnov, when listing the basic principles of Soviet psychology, presents them as applying to all Soviet psychologists. But Smirnov belongs definitely to the Moscow group, and the principles he lists have been set up by Moscow psychologists. The principles, says Smirnov, were worked out by psychologists "hand in hand with such educationists as Krupskaya and Makarenko . . . in an obstinate struggle for the purity of Marxist science" (1957, p. 21).

The basic standpoints are as follows:

1. Mind is a function of the brain which is a specially organized matter.

2. Mind is a reflection of reality.

3. Mental life, like all that exists, is governed by causal laws.

4. Mental life is inseparable from man's actions.

5. In the actions the whole personality of man is involved, and the experience of his whole past is reflected in his actions.

6. Mind is not an appendage of activity, but an orienting agent.

7. Mental development is a process characterized by qualitative changes which can be followed

   (a) in the prehistory of human consciousness

   (b) in the historical development of humanity

   (c) in ontogenesis, the individual development of each person.

8. At the basis of all change there are forces of inner contradictions.

9. Consciousness is the highest stage of development, and characteristic only of human beings.

10. Consciousness is socially determined.

11. Personality is shaped through the person's interaction with objective reality.

12. It is possible to influence mental development by organizing appropriately the person's life and activities (Ibid., pp. 19-21).

This set of principles is almost completely derived

from Vygotski's theory and has only a slight tinge of Pavlovianism added in the concept of orienting activity. This is also the set of principles on the basis of which A. V. Zaporozhets works.

RESEARCH METHODS OF SOVIET PSYCHOLOGY

Experimental Methods

Soviet psychological research uses many methods. But the most important one is the experimental method.

Laboratory Experiments. Soviet laboratory experiments often use intricate apparatus. The most complex apparatus is used for studies of "higher nervous activity." Some of such studies are entirely neuro-physiological. Such studies may make use of an encephalograph, or electrodes registering tongue movements, or a gadget registering the movement of the eye muscles, and so forth. Other studies of "higher nervous activity" are psychological and investigate reactions to certain stimuli. They, too, use complex apparatus. Thus a gadget registering motor reactions to certain complex stimuli is described as consisting of a film projector and an epidiascope, with an appropriate screen, a microphone, a sound generator, pneumatic cushions connected with a magnetophone, various types of electric bulbs and a special seating accommodation for the subject, all in one unit (*Voprosy Psikhologii*, 1955-1). The galvanic reaction apparatus is often used in such studies.

Experiments for the study of cognitive abilities use somewhat simpler apparatus. But in most cases at least a kymograph is used to register the subject's reactions. Some experiments with children use simple Piagetian style means, as wooden blocks, simple levers, and so on.

In most cases subjects have to respond by performing some actions, which besides being recorded quantitatively, are also described qualitatively in minute detail, with all mimical and other expressions of the subject. In studies on reasoning, problem solving, and so on, verbal responses are recorded, besides the required action.

Natural Experiment. Soviet psychologists regard this form of experiment as an indigenous Russian invention (Bauer, 1952, p. 153). A natural experiment is used mainly with children, in an environment familiar to the child, preferably a kindergarten or a playground. The experimental objects are dolls, balls, or other toys, differing in colour and other properties. The directions given by the experimenter are indirect, saying, for example, "let us play with this!" (Voprosy Psikhologii, 1955-3, p. 115). Natural experiments are conducted also in schools, in ordinary learning conditions.

Developmental Experiment. L. S. Vygotski distinguished two levels of a child's development: the actual level, and the zone of nearest development. In accordance

with this he devised the form of guided or developmental testing. A child was given some practical or abstract problem to solve, first completely on his own, and then, with tasks the child could not perform, with the help of directions from the experimenter. In the first part the subject's achievement was recorded as the child's actual level of development, in the second, as the nearest development. It was found that children of the same actual development differed very much in the level of nearest development (1956, pp. 273ff, 447ff). Thus a measure of educability was reached, and Vygotski stated that the "zone of nearest development" is more decisive for intellectual development and school achievement than the actual level (Ibid.).

Another variety of the developmental experiment consists of observing how, under the influence of deliberately varied conditions, the child's mental characteristics develop (Zaporozhets, 1964b).

Statistical Procedures. A. Mintz stated in 1960 that "the supposition seems reasonable that Soviet psychologists are familiar with statistical methods, and refrain from using them for other reasons than lack of familiarity" (Bauer, 1962, p. 3). This was true until quite recently. Till now some quite simple statistics were often presented to the reader. Usually a small table or a graph was given which indicated how many per cent of

the subjects of such and such an age had performed a certain task, and how many had failed to do so. The number of subjects was seldom given. Experimental tasks and conditions were described in a very general way. But much attention was given to the description of the subject's various reactions to the task, including such detail as squinting the eyes, scratching the head, smiling, and so on. A. V. Zaporozhets' reports of experiments always consisted of this type of statistics.

The great interest for the qualitative aspects of developmental changes must have accounted for a part of the Soviet aversion for more intricate statistics. But the very sudden emergence of full statistical treatment in the 1960's seems to indicate that there was an official restriction on the numerical expression of research results. Now the restraint is disappearing. Russian terms for standard deviation, standard error, rank correlation. alpha error, and so on, are already in common use. Recent issues of Voprosy Psikhologii team with formulas and statistical tables (1963-1966). The highest level of mathematical formulation is, naturally, reached in the studies on such topics as information theory, encephalography, and so forth. But also experiments on perception, speech, emotional stress, and so on, receive full statistical treatment. The research language in the East and the West has become identical.

Standard Testing and Questionnaires

Standard testing and questionnaires were both severely condemned by the 1936 decree on the "perversions of pedology" as pernicious and pseudo-scientific. The ban has not been lifted yet. The rationale for not using standard tests is as follows: (1) It was difficult to say precisely what the tests measured. (2) Tests may show achievements, results, but they do not show the processes by which the child has arrived at these results (whether by painful memorization, by speedy understanding, with or without the help of environment, and so on). (3) When standard tests were used many errors were perpetrated, some children were ~~st~~wrongly classified as retarded, teachers neglected to stimulate the development of children of low intelligence quotient, considering them as hopeless, and so forth (Zaporozhets, 1956a, p. 1). Questionnaires are simply classified as a "superficial method, characteristic of subjectivist bourgeois views" (Zaporozhets, 1955b).

It is interesting to note that tests were criticized already in pre-revolutionary Russia since 1908. Some psychologists were over-enthusiastic and invented tests of their own, much criticized by others. Some repudiated tests completely. An intermediate position was taken by Chelpanov and Blonski. Chelpanov acknowledged the value of tests, but warned against an incautious use of them without a deep theoretical analysis. Also he

criticized an over-simplification of complex mental phenomena, and an unwarrented generalization of test results to the whole personality of the testee. Kornilov pointed out that incidental testing conditions were not taken into consideration in evaluating test results. A factor which deepened the aversion to intelligence tests in Russia was the discovery that the Binet-Simon test (tried out soon after 1910) rated the mental age of Russian children one to three years lower than that of comparable French children (Sokolov, 1956).

At present the absence of standard tests is felt, and proposals are made for devising new "diagnostic methods" which would measure, (1) a level of mental activeness (recitation and reproduction of learned material, (2) a level of generalization and application, (3) a level of mental flexibility, and (4) a level of abstract reasoning. Also it is proposed to devise means for diagnosing the child's power of observation and of critical evaluation (Liublinskaya, 1962, pp. 5-14).

Projective Techniques

Projective techniques were not banned in 1936, and they are in use. The commonly used method is to choose a fictional hero from literature and let young people didcuss the merits and/or demerits of the hero, or weigh the question whether they would like to be friends with him,

and then to interpret the opinions as projections of self (Bozhovich, 1955). This method is mainly used for personality studies with teen-age students.

"Beseda" (either an informal interview, or an informal group discussion) is frequently used, and the verbal statements may be either taken as straightforward opinions, or interpreted projectively. In the same way students' essays are used. Likewise the products of children's creativity may be analyzed, or the play of younger children (~~109~~). (Zaporozhets 1964b)

Observation

Observation is regarded as a very important method of child study, if it is done systematically and the child is observed in his typical activities. Observations by non-psychologists, such as parents, and others, are also given consideration (Zaporozhets, 1964b).

Longitudinal studies have been carried out during the 1950's and 1960's, mainly with younger children (Elkonin, 1966). Though they were begun with great hopes as to their advantages as compared to cross-sectional studies (Zaporozhets, 1964b) the hopes were not fulfilled. Results showed that a longitudinal study has the same drawbacks as a cross-sectional one. "The process of development, as well as its causes and characteristics remain obscure and are represented as a 'mere sequence of developmental levels" (Elkonin, 1966, pp. 63 and 71).

Thus Soviet psychologists have found that an intuitive vision of the dynamic process of development cannot be translated into observational or experimental results, research data remain static.

Exegetic Method

In the 1940's and 1950's it was quite common in psychological writings to follow each important statement by a quotation from Lenin, Stalin, Marx, Engels, or Pavlov (see examples in Part II, p. 145-146 5, a). The quotations were chosen just like verses from Scripture and were sufficient for proving that a theoretical statement was true. The whole psychological theory acquired the appearance of an exegesis of Marxist authorities. Connected with this was a special etiquette in arranging the list of references. Number one on the list was always Marx, then followed Engels, then Lenin; next came Stalin or Khrushiov, as the case might be; and only then began the alphabetical list of psychological writings. Such an arrangement was still used in 1959, but not in recent years.

In Voprosy Psikhologii 1955, No. 2, Pavlov was quoted in seven articles and reviews, Sechenov in four, Marx and Engels both in two; five articles did not quote any of these. In Voprosy Psikhologii, 1960, No. 2, Pavlov was quoted in three articles, Sechenov in two, Lenin in five, Engels in one; eight articles did not

quote any of these. In Voprosy Psikhologii, 1965, No. 2, of twenty-two articles and reviews not one quotes any of the above. The days of exegesis in psychological research seem to be over.

It is not a general rule yet. In educational literature quoting Marxist authorities is still common. In the Vestnik Moscovskogo Universiteta, 1965, No. 2, of the four articles on psychology and philosophy all four quote Engels and Marx and two quote Lenin. Philosophy still consists of an exposition of writings of Marxist authorities (Istoriya Filosofii, 1957; Spirkin, 1964).

But experimental psychologists seem to have become specialists in their field who can rely on their own findings.

Attitudes to Foreign Research

Before 1946 foreign literature was referred to freely by Soviet psychologists. The 1945 study by Leontiev and Zaporozhets had in the reference list fifty-three Soviet titles and sixty-one foreign titles. But two of Zaporozhets' articles published in 1947 gave no reference at all (1947a; b). A 1948 article referred to fourteen titles, but all were, without exception, Soviet sources (1948b). Since 1953 foreign literature is again quoted freely. But it is only in the 1960's that articles in Voprosy Psikhologii began to quote foreign sources without describing them as bourgeois or reactionary.

But this is not yet so outside the pages of Voprosy Psikhologii. One can still find in the 1960's such statements as: "A decisive unmasking of the reactionary-political-ideological essence of idealistic psychological theories, the purpose of which is to glorify the capitalist system . . . is the duty of the foremost psychologists of all countries" (Mansurov, 1962, p. 10).

If the trend of Voprosy Psikhologii not to differentiate between foreign and Soviet sources would become general, Soviet psychologists would lose a useful device. It seems that their constant cavilling at foreign psychological work served not only for proving their loyalty to the authorities but also as a foil for sorting out their own ideas. Sometimes there was a case of sheer projection. For example, Zaporozhets states that on the basis of "the reactionary idealist" concepts of play "bourgeois psychologists deny the possibility of guiding children's play and advise leaving the child to his own resources" (1964a, p. 62). He contrasts this with the Soviet principles of a developmentally guided children's play. But a page later he complains about the practice of Soviet kindergarten instructors to leave children to their own resources during play time (Ibid., p. 63). It seems that it is easier to criticize local failures when they are projected to a foreign country.

Teamwork

The contribution of each individual Soviet psychologist to the common pool of Soviet psychological knowledge is, except in few cases, difficult to isolate. This is not only because all psychologists are supposed to base their work on the same principles and carry out similar projects, but also because the actual research is carried out as teamwork. In each study it is mentioned under whose direction the experiments were carried out. This is usually the director of a research institute or a research laboratory. Then the person who conducted the experiment is named, and a list of persons who assisted her or him is given, always adding an "*etcetera*." The "*etceteras*" presumably are undergraduate or graduate students. But what is the status and the limits of initiative of the other persons is not clear. Presumably such a way of working is very satisfying. One may get a much greater satisfaction of knowing that one's smallest contribution is used for carrying out a large project, than of doing research for one's personal glorification in keen rivalry with other psychologists. But for an outsider to try to isolate the work and ideas of a single Soviet psychologist is a difficult task.

General Impressions of Soviet Psychological Research

Hardly more than a decade ago the impression was

that Soviet psychology is a closed system, relying on clearly formulated basic principles, working for clearly defined goals, using well-defined methods and being completely self-sufficient.

But in the 1960's one cannot be sure of this. Soviet psychology is branching out into new fields, isolation is breaking down, old methods and attitudes are abandoned, new language is adopted, professional expertise and independence are growing. It is hard to predict in which direction Soviet psychology will move in the next decade.

The only factor that ties Soviet psychology to Marxist orthodoxy is its connection with philosophy. Soviet philosophy is still firmly grounded on an orthodox Leninist platform, though its principles are now more crystallized than they were in Lenin's time. In the 1930's Soviet psychology was one of the agents that helped this crystallization , by developing a new concept of man. Now Soviet philosophy has matured to the stage of a dialectic thesis. During the next decades it will be interesting to find out whether Soviet psychology will emerge as a new antithesis, and what will be the resulting synthesis.

P A R T   II

WORK OF A. V. ZAPOROZHETS AS REFLECTED IN HIS PUBLICATIONS

PLACEMENT OF A. V. ZAPOROZHETS' WORK WITHIN THE FRAMEWORK OF SOVIET PSYCHOLOGICAL RESEARCH

A. V. Zaporozhets definitely belongs to the Moscow group of Soviet psychologists. This means that he is closely connected with the psychologists who originally formulated the principles of a dialectic psychology, and that he is interested in cognitive-intellectual processes, has a developmental, holistic, and activistic view of the human mind, is interested in the development of young children, emphasizes the cultural-social factors of development, the role of speech and of activity, and the specifically human aspects of man's mind.

War time work brought Zaporozhets into the sphere of physiological research, and by the 1950's he adapted his views to the Pavlovian theory. But he has now abandoned the Pavlovian concepts except that of the orienting reflex.

Since the appointment as a director of an educational research institute, problems of educational psychology dominate Zaporozhets' work.

Except for the war time physiotherapeutic work, all Zaporozhets' research has been done with preschool children, his research has been mainly experimental, and always from the viewpoint of a developmental psychology.

BIOGRAPHICAL DATA

Encyclopedias and periodicals mention only a few mileposts in the life of A. V. Zaporozhets:

Aleksandr Vladimirovich Zaporozhets was born on September 12, 1905. In 1929 he became an Assistant at the Chair of Psychology of the N. K. Krupskaya Academy of Communist Education in Moscow. In the same year he began research in the field of preschool children under the direction of A. R. Luriya and A. N. Leontiev. In 1930, A. V. Zaporozhets graduated from Moscow II State University. In 1933 he was appointed a Docent (Assistant Professor), and later a Professor of Psychology at the G. S. Skovoroda Pedagogical Institute in Kharkiv, Ukraine. In 1944, he was appointed Director of the Research Laboratory of Preschool Child Psychology at the Psychological Institute of the APN (Academy of Pedagogical Sciences) in Moscow. In 1960 he was appointed Director of the newly-founded Research Institute of Preschool Education of the APN and Professor of Psychology at the Moscow State University (_Pedogicheskaya Entsiklopediya_; _Pedagogicheski Slovar'_; _Filosofskaya Entsiklopedia_; _Doskol'noye Vospitaniye_, 1966-1).

Zaporozhets' birthplace was Kiyev, Ukraine. His first four psychological studies were published in Ukrainian. Zaporozhets proudly states that his teacher

was L, S. Vygotski (1960a), Zaporozhets' contact with Vygotski must have taken place during the period between the late 1920's and 1933, either as an enrolled student, or an admiring disciple. The congratulatory article to Zaporozhets' sixtieth birthday says, "A. V. Zaporozhets was the pupil of the greatest Soviet psychologist, L. S. Vygotski whose ideas have in many ways determined the development of child and educational psychology" (Doshkol'noye Vospitaniye, 1966-1, p. 44). Vygotski's ideas, work, and personality have in many ways determined also Zaporozhets' work and ideas.

During the same period Zaporozhets came into contact with other nuclear members of the Moscow group, as Luriya, Leontiev, and Smirnov. For many years Zaporozhets' work remained connected with that of Leontiev. Leontiev had begun work in Kharkiv in 1932, and it was around him that a group of young psychologists gathered, including Zaporozhets, Galperin, Zinchenko, Bozhovich, and many others. It was probably in 1935, when Leontiev returned to Moscow, that Zaporozhets became his successor in Kharkiv as a Professor of Psychology (Leontiev, 1965).

During the war the work partnership with Leontiev was renewed. Judging by bibliographical data Zaporozhets seems to have spent a part of the World War II period at Kurovka, Sverdlovsk district (in the Asian part of USSR) where Leontiev directed a rehabilitation hospital for

wounded soldiers (Rubinstein, 1944; Leontiev, 1945; 1965). Leontiev's and Zaporozhets' main work was to study the restoration of movement in an injured arm.

In 1943 Zaporozhets was back in Moscow transferring his experience with wounded soldiers to the field of preschool children, and bringing his research on voluntary movements to a theoretical level. After an ominous silence of five years Zaporozhets continued publishing studies on voluntary movements, until finally the research took the shape of a doctoral thesis. In 1958 Zaporozhets defended his thesis "Development of Voluntary Movements" and received the degree of Doctor of Pedagogical Sciences. In 1959 he was made a corresponding member of the Academy of Pedagogical Sciences.

With the thesis Zaporozhets had finally exhausted his interest in voluntary movements, and returned to his original field of interest, cognition. But whereas in the early period of his research he was mainly interested in thinking, he now turned to perception.

Dr. Zaporozhets speaks English. In 1963-64 he spent six months on exchange at the Cornell University, U.S.A. (Gulutsan, 1964). He has attended many international psychological conferences; in Montreal, Bonn, London, and so forth, and has presented reports there. He has visited France and several other European countries. In August, 1966, at the XVIII International Conference of Psychology in Moscow he was to organize and conduct a symposium on the development of perception and activity (Luriya, 1966).

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TABLE II

TOPICS OF A. V. ZAPOROZHETS' PUBLICATIONS

Year of Publ.	General Psychology	Cognition		Motor-Activity		Educational Psychology	Reviews
		Thinking	Perception	Therapy	Theory		
1939		1					
1940			2				
1941		3☆,4					
1942				5☆B			
1943							
1944							
1945				6☆B,7	8		
1946							
1947		9		10☆,11☆			
1948		16			14,15	12,13	
1949							
1950							
1951							
1952							
1953	18B				17		
1954					19		20☆
1955					21		
1956	23,24				22		
1957					25,26		20a☆
1958					27,28,29 30,31,32		
1959							33,34☆
1960			37		35B		36☆
1961			39			38☆	
1962						40	
1963			42			41,42,43☆	
1964	44☆B(ed),45	44☆				46	47☆
1965	51☆B,(ed.)	50☆B	48				49☆
1966			53,54,55			52☆	

☆Joint author.

B - in book form.

Numbers refer to preceding bibliography.

Table II gives a graphic overview of Zaporozhets' interests in psychological research and at the same time of the influence of world events on his work. Wars which Russia fought between 1939 and 1941 seem not to have stopped psychological research, at least not in the Ukraine. Russia's entrance into World War II in 1941 gave a definite shift to psychologists' work. The table makes one aware of a startling gap in Zaporozhets' publications between 1948 and 1953. As the discussion of his works will show, a great shift in his standpoints took place during that time. The table makes one also aware of the great increase in the number and versatility of Zaporozhets' publications since the late 1950's.

What the bibliographical table is not able to show is Zaporozhets' work as a teacher, organizer, and co-ordinator of research.

ZAPOROZHETS' WORK IN THE FIELD OF MOTOR ACTIVITY

Chronologically the area of motor activity was not Zaporozhets' first field of research. But this area is connected with the older elements in the system of Soviet Psychology, namely the teaching of Sechenov and Pavlov. Also the study of motor activity forms a closed unit in Zaporozhets' work. It seems that he will not return to it, and that this area forms already a part of his professional past.

Because of these considerations, though Zaporozhets began his research in the field of children's thinking, his research on voluntary movements will be discussed first.

Motor Therapy

The work done in the rehabilitation hospital in Kurovka, had only one purpose: how to make soldiers who had lost the use of their arms capable of work again, planing, hammering, scything, and so forth. But the approach Zaporozhets and Leontiev brought to it was exactly the same they had worked out in their psychological laboratories. They were developmental psychologists, and they conceived the restoration of movement in the muscles developmentally. Zaporozhets stated that the restoration of motor function should be regarded as

a special case of the developmental process (Leontiev and Zaporozhets, 1945, Chapter V), consisting not only of a quantitative growth of sensitivity, movement volume and power, but of a qualitative change. The change involved different attitudes, devices, motivation at each stage, and a differently structured schema of the movement. Also, the effects of the injury were conceived not as a quantitative decrease in the power of muscles, but a reverting by the injured person to more primitive childish methods of attacking the task (Ibid., Chapter VI). The tension of hand muscles, the pressure given by the hand were, using various devices, recorded graphically, and the pattern found was very similar to that produced by a child (Ibid., Chapter IV).

Zaporozhets and Leontiev had a holistic view of the human mind. The same holistic approach they had to the rehabilitation work. The principle adopted was "not to heal the wound, but the wounded," "not the injured hand, but the man with the injured hand" (Ibid, Preface; Chapter X). The physiological explanation given for the restoration process was that changes in the skeletal-muscular system produce changes in the proprioceptive sensitivity, and this, in turn disrupts co-ordination of movements (Ibid., Chapter III). Zaporozhets, Leontiev, and other psychologists (Neverovich, Dimanstein,

Yendovitskaya, Galperin, Zinchenko, Ginevskaya, Rubinstein, Merlin, Komm, Priorov, and others were involved in "the therapy of the upper limbs") stressed most of all the psychological aspects of the process, the cognitive changes, motivation, value judgment, social situation, and general attitudes.

Zaporozhets and the other psychologists found an opportunity to stress also the difference between animals and human beings in the restoration work. The physiologist Asratian was quoted saying that in the restoration of the use of limbs with primitive animals only nerve centres were concerned, whereas with mammals the cortex was involved. Thus in the case of higher animals restoration of limbs was not an instinctive adaptation, but conscious habit formation (Ibid., Chapter V). Zaporozhets added that in the case of human beings the situation was still more complex. The human being evaluates his condition, and can adopt either an attitude of resignation, which would prevent the recovery, or an attitude of active striving towards recovery (Ibid., Chapter V). The effect of various attitudes on recovery was studied in detail.

The interesting fact to be noted is that in the writings about the physiotherapeutic work, Zaporozhets does not make any use of Pavlovian language. Terms like conditioning, reflex, signal system, do not occur

at all. But Zaporozhets uses freely Uznadzian terms. The whole process of recovery is conceived as a succession of different sets and attitudes. After injury the limb is in the state of "dynamic immobilization" which does depend solely on physical injury, but also on mental defense mechanisms. The result is a "negative motor set," which prevents the patient from using the injured limb. During recovery other sets are adopted one after another, each requiring a structural reorganization of the total attitude of the patient as well as the reorganization of the muscular system. Uznadze is quoted as saying that the establishment of such sets may be completely subconscious. Uznadze is also quoted in support of the holistic view stating that a set is not a condition of a separate organ, but a condition of the total personality. Various Uznadze style experiments involving discrimination of weights, pressure, shapes, and so forth, were performed to prove that the set was a decisive factor determining the level of physical performance by the patient.

Holistic is Zaporozhets' concept of work as a total situation, in which the condition of work, the task, the meaning and value the worker assigns to the work product, his general attitude, are all part of the work situation. The muscular performance is only a part of the whole work situation.

Holistic is also the conception of man as an integral part of the collective group within which he is active, and of the whole society. The experimental finding was that the general attitude of the group was decisive for the performance of an individual worker, and that for the patient it was very important to know that the result of his work is socially valuable.

On the basis of these findings the psychologists' advice was that the best activity for rehabilitation was genuine work, not just gymnastic exercises or simulation of work, but work the goal of which was socially valuable. They recommended also a comprehensive total re-education of the patient organized as a step-by-step training (*Ibid*.).

Transfer to Child Psychology

On his appointment as a Director of the Laboratory for Preschool Child Psychology of the Psychological Instutute of the APN, A. V. Zaporozhets was able to return to his original area, the study of three to seven year old children. Part of his co-workers in the rehabilitation task, as Neverovich, Ginevskaya, and Dimanstein were now working under Zaporozhets' direction. With great enthusiasm they began to apply their war time experience to the study of preschool children. The practical purpose of studying preschool children's

voluntary movements was to help the work of physical education instructors. But on reading the reports of the experimental series one gets the impression that the main impetus of the study was sheer enthusiasm in experimentation and a scientific curiosity. The thinking underlying the experiments was still Vygotskian with an admixture of Uznadzian principles. No Pavlovianism had yet entered the research. In the 1948 report Sechenov is quoted once, but no terms of the reflex theory are used (1948b). The main goal of the study was to prove that children's control of their movements depends largely on psychological factors and on the total situation in which the activity takes place. The physiological basis of sensory and muscular development determines only the level of possibilities for activity, but not the actual performance (Ibid., p. 126).

The Experimental design used with children was partly taken wholesale from the study of wounded soldiers, partly it was adapted correspondingly. The report emphasizes the care with which the choice of the experimental situation was made, trying to place children into accustomed situations and into activities typical for them. At the same time the opportunity is taken to ridicule Western research. As an example Zaporozhets quotes an American study, in which rats and human infants and adults were made to learn passing

through mazes. Zaporozhets points out that in such an experiment only the rats were in their natural element, and therefore, not taking this advantage of the rats into consideration, the experimenters made "a preposterous conclusion that there was no difference between the performance of rats and men" (Ibid., p. 128).

In the experiments carried out by Neverovich she observed children handling everyday objects like spoons, combs, and scissors. Ginevskaya studied two simple activities, jumping and hammering. First the influence of the task on the performance was studied. For example, children were asked to jump across a chalk line, obeying following instructions: (a) "jump as far as you can," (b) "jump to this mark," and (c) again "jump as far as you can" (just like the soldiers were asked to lift their arms "as far as possible," and "to here"). With children, as with soldiers, it was found that instruction (b) produced much better results than instruction (a). With three to four year old children instruction (b) was also much more effective than instruction (c). The behaviour of the children during the jump was carefully recorded and analyzed. It was found that there are three phases in the performance of a jump by children: (1) an impulsive one-act movement without any preparation, (2) a global preparation preceding the jump serving more for expressive purposes than helping the

jump (as stretching the neck, or trampling in place), and (3) taking an appropriate posture before the jump. Three to four year olds were at phase (1) with instructions (a) and (c), but at phase (2) with instruction (b). Five to six year olds were in many cases at phase (2), but most of all with instruction (b). Only seven year old children reached phase (3) and that also mostly with instruction (b). The conclusions were, first, that the nature of the task determines the performance; second, that the difference in performance is not only quantitative (as the length of the jump), but "at different developmental levels the action has a different structure (Ibid., p. 142).

Neverovich also described various stages in children's handling of everyday objects. At the first stage the child treats the object as a continuation of the hand (for example, holding the spoon straight in such a way that the food dropped off), and only gradually learns to consider the special shape of the tool and to control the muscles correspondingly. She found also that younger children cannot perform make-believe movements without having the necessary tool in hand. Similar stages were found in children's handling of work tools, like hammers, saws. Ginevskaya found also that children pass the transitional stages more quickly when instructed by an adult. The conclusion was that

correct handling of tools is not based on the maturation of the nervous system, nor does the child discover it on his own, but he needs instruction in order to learn skills developed by society. Thus a confirmation for Vygotski's cultural theory was perceived.

Another factor of performance studied was the influence of the situation in which the activity takes place. It was assumed that the play situation may give most motivation for a better performance. But the results did not support the assumption. When children played carpenter they wielded the hammer only symbolically; when playing a rabbit jumping a ditch they only trotted across the space assumed to be the ditch. In this was perceived the confirmation of Vygotski's statement that "in play the importance of the imagined situation decreases and the importance of the game rules increases" (Ibid., p. 160). Leontiev's statement was also confirmed that important are not the motives alone, or the task alone, but a combination of the two (Ibid.). The only exception in the game situation was when the game depicted a sports competition. The one who played the champion gave the best performance.

When children were observed jumping over obstacles in real-life situations their performance was still worse than in games. But the performance in games was always worse than in the situation where the child

followed an adult's instruction to jump "so far" (Ibid., pp. 154-160).

Another series of experiments was of an Uznadzian type, a discrimination of weights. The same apparatus was used as with soldiers. It consisted of two levers which had to be pressed simultaneously for lifting weights not seen by the subject. The pressure of each hand was registered on a kymograph. Subjects had to decide which weight was heavier. For the establishment of a set the lighter weight was always placed on the same side. When the registration showed an established set, equal weights were placed on both sides. A normal adult then experiences a contrast illusion, and the hand which formerly had lifted heavier weights judges the equal weight to be the lighter one. But it was found that children under five do not experience any illusion, nor did the wounded hand of an adult experience illusion. The explanation given was that in both cases a co-ordination of muscles was lacking and no extra effort in expectation of a heavier weight was used. The reason in the case of soldiers was a defense mechanism, in the case of children, inability to co-ordinate movements. Five to six year old children experienced an "assimilative illusion," that is, they could not decide whether the weight was lighter or heavier. Around seven years a contrast illusion set in.

All the above experiments were interpreted as a proof that physical movements are determined by psychological factors.

Though it was shown that play was not the most effective situation for training the children's coordination of movements, from an educational standpoint play was still recommended, because for preschool children play is the first feasible activity in which they can imitate and practice a variety of new combinations of movements (*Ibid.*).

Integrating Pavlov's Theory

After an interval of five years Zaporozhets resumed writing about his studies of voluntary movements. But his writings had undergone a considerable change during the interval. The theoretical basis had become strictly Pavlovian, everything was now explained in terms of the reflex theory. The general tone had changed also. The experiment-happy enthusiasm was substituted by a tone of authority and a critical attitude to other studies. The clearest picture of this change is given by the article on set written in 1958 (b), thirteen years after the 1945 article on restoration of movement (Leontiev and Zaporozhets, 1945) which was full of enthusiastic quotations from Uznadze.

Set Re-Examined. The article (1958b) begins with

a lengthy list of research projects on the study of set done in the meantime: studies of the physiological basis of set (tonic nerve processes) by Orbeli, Asratian, Anokhin, and others; studies by Georgian psychologists, Natadze, Norakidze, Hachapuridze, and many others; studies of set from the viewpoint of conditioned reflexes; and studies by Zaporozhets and his co-workers (Ginevskaya, Dimanstein, Zinchenko, Venger, Godovikova, Meshiariakov, Tselikovskaya, and others) who also studied set from the viewpoint of conditional reflexes.

Tselikovskaya, Venger, and Zinchenko experimented with cardboard boxes which had coloured labels of various patterns and contained different weights. When the weights were distributed in correspondence to the label patterns, and children were asked to sort out the boxes by the esthetic quality of the pattern (not mentioning the weight at all), very soon a weight set was registered. When the weights were distributed in correspondence to the colour of the boxes, no weight set was formed. Then, when the subjects were asked to sort the same boxes by weight and by colour, 73 per cent developed an assimilative illusion. When the children had to sort boxes considering only colour, a colour-weight set appeared. But when they had to sort the same boxes considering only the weight, a mere 20 per cent developed a weight-colour set. When children had

to play with such boxes a kind of jig-saw puzzle, not considering weight or colour, no set whatever appeared (Ibid., pp. 4-6).

To explain the results of these experiments colour was named the "signalling sign" and weight the "sign to be signalled." Set was defined as a process of automatization in which the signalling sign immediately produces a set, and the sign to be signalled is insufficiently explored. The signalling signs are in the focus of attention, and those to be signalled remain in the periphery. Those signals which are focused produce an orienting reflex, those that are in periphery produce automatization (Ibid., p. 6).

The decisive experiment on which this explanation was based (the one in which weight was to be given attention) was rather inconclusive. The sample was surprisingly small, only twenty subjects (in other experiments there were at least forty). Of these twenty subjects nine did not follow the instructions properly. Also it was not taken into consideration that discriminating weight takes place in a quite different way than discriminating colour. Weights can be compared only one by one, and not in a single overview as with visual signs. It seems that the experiment served only as an illustration of a ready-made theory which was an extrapolation of Pavlov's theory. The

theory presented by Zaporozhets is that the most decisive factor in the formation or non-formation of set is the orienting reflex. The intention behind this theory seems to be to prove that psychological elements are the most decisive ones in set formation. But the proof is based on scanty evidence. Such a high-handed procedure is the more to be noted, because experimentation in Zaporozhets' earlier work did not show such an urge to adapt facts to theory.

Other experiments on set were performed. Some of them confirmed Uznadze's principles. For example, in comparing weights by lifting them repeatedly a "levelling" in the judgment occurred, but only in the case of large weight differences. But in general Zaporozhets is critical of Uznadze's theory. Zaporozhets acknowledges Uznadze's merit in having placed the concept of set on a materialistic basis, conceiving it as a peculiar reflection of the objective situation (Ibid., p. 5), but at the same time emphasizing the psychological elements in set (1960a, p. 375). But Zaporozhets denies that set is primary in mental life. Zaporozhets states that consciousness and the subject's activity are primary, and set is only secondary (1958b, p. 8). He is most of all against Uznadze's and Prangishvili's view that set involves the whole personality (he supported the same view in 1945) on the grounds that the

Georgians have a wrong concept of personality. For Uznadze, says Zaporozhets, personality is synonymous with a subject or an organism, and he does not consider man as a social being, who has a position in society and has interrelations with other human beings of his environment. The experimental methods used by Georgians for the study of set are suitable only for the study of the formation of simplest psycho-physical sets, but not for studying set in a wider meaning, as personality attitudes (Ibid., p. 9).

Zaporozhets states that set should be studied in connection with the study of meaning, of life position of the subject, and other conditions, centering on the specifically human traits of personality formed in conditions of social existence. In terms of Zaporozhets' theory of voluntary movements, organized systems of movements are formed consciously. But when they are mastered sufficiently the system of movements becomes stereotyped. Formerly it was something external to the subject, an object to be mastered. But when it becomes stereotyped the system of movements changes as if into a peculiar organ of the individual, a means to express and realize man's relation to reality. Then single movements have not to be regulated consciously, but the whole movement system comes under the regulation by a set which directs the general strategy

of motor activity in correspondence with the life interests of the personality.

Thus Zaporozhets breaks off his association with the Georgian psychological school. But though, outwardly his allegiance now clearly to the Pavlovian school of thought, Zaporozhets never makes a break with Vygotskian ideas. It was Vygotski who energetically fought for the recognition of consciousness and emphasized the role of cognition in man's behaviour. The Pavlovian term "orienting reflex" is used by Zaporozhets as a suitable receptacle for Vygotski's ideas. And Zaporozhets continues and expands the work begun by Vygotski stressing the intellectual aspects of mental life even in the sphere of motor activity. "Seemingly," says Zaporozhets, "there is not only a motor perception and motor memory, but also a motor intellect" (1948b, p. 163).

Pavlov used also a term "social reflex" (1941, p. 107). But its connotations do not make the concept a convenient receptacle for Vygotski's cultural historicism. So Zaporozhets continues defending Vygotski's idea of man as a social being without a reference to Pavlovian terms. The concept of man as a dynamic being whose dialectical development is determined by complex interactions with other human beings and with the total of society's experience, is still there, though intermingled with Pavlovian terms.

The Orienting Reflex. In the analysis of the phenomenon of the orienting reflex Zaporozhets combines Pavlov's theory, Sechenov's views, Engels-Lenin's reflection theory, Vygotski's standpoints, and the modern information theory.

The "what-is-it" reflex was one of those special reflexes which attracted Pavlov's attention during his last years. In the behaviour of his dogs it expressed itself as scanning or smelling of a new signal presented and delaying action. Pavlov named it also the "investigatory reflex" or the "orienting reaction" (1966, p. 96). He fitted it into his system of reflexes by assuming that the inhibitory reflex and the orienting reflex are closely connected (1941, p. 179), the latter serving as a defense mechanism. Pavlov was interested in the role of the orienting reflex in the scheme of irradiation, induction, and other nerve cell processes (*Ibid.*, p. 291). But during the time when psychology proper was suspect in the Soviet Union, Soviet psychologists found in the orienting reflex a loophole which enabled them to study cognitive processes.

Sechenov's concept of the reflex as a three-phase act gave also psychologists a loophole for the discussion of cognitive problems. Zaporozhets states that Sechenov himself viewed the middle phase of the reflex as a psychological link and an integral part of a

reflex (1956a, p. 5). Sechenov himself viewed the "middle link" as a reflection of sense data in the brain of the situation of an action. This view could be easily fitted together with the Engels-Lenin theory of reflection, the view that human actions are realized by the help of a faithful reflection of life conditions in the mind. Zaporozhets employs the support of both these theories for stating that the task of the study of voluntary movements is not to ignore the psychological nature of human actions (1957b, p. 328). As a convinced Vygotskian, Zaporozhets is not satisfied with acknowledging only the sensory element in actions, but states that Pavlov and Sechenov had explained that action is a "consequence of thought" (1958a, p. 273; 1956a). Actually by this interpretation Zaporozhets reverses Sechenov's meaning. For Sechenov thought was inhibited action, for Zaporozhets action is the realization of thought. Zaporozhets appears to be eagerly defending the right to study the higher mental activity instead of the higher nervous activity.

In further support of the view of a psychological determination of motor acts Zaporozhets cites the results of the biomechanical research by Ukhtomski and others, which showed that not even the most accurate dosing of the initiating impulses could change the direction of a movement to be executed nor ensure its

adaptation to given conditions (1957b; 1958a). Anokhin, another physiologist, found that correction of a movement can be achieved only through "return afferentation" from the muscular system. This Zaporozhets interprets as feed-back in terms of information theory. He adds that feed-back alone does not achieve a correction of actions, the information must be re-coded into executive terms, and for this purpose the subject must have a program of what must be performed and in which way (1957b, p. 328). This program at a higher stage of development takes the shape of a more or less clear image. The orienting reaction is the means of achieving such an image (Ibid., p. 330).

Experimental studies of the orienting reaction by Zaporozhets and his co-workers(Yendovitskaya, Boguslavskaya, Neverovich, Kisliuk, Poddiakova, Ovchinnikova, Tsvetkova, Ruzskaya, and others) followed previous studies by Luriya, Leontiev, Galperin, and others. Various experimental designs were used: children had to guide toy cars through mazes, to produce motor reactions following the exposition of various geometrical shapes to be discriminated, to press reaction keys, to handle simple work tools, and so on. In all experiments it was noticed that children's performance improved considerably when they were given a chance for orienting activity, that is, to scan, to touch, to manipulate the objects

presented (1954, p. 125).

The children's reactions were recorded in detail and following phases were found in the development of the orienting reaction. At the first level, with three to five year old children, the orienting activity is of a chaotic nature. Young children do not distinguish those elements in the situation which have a signalling role. Their orienting reaction is very active but they scan quite irrelevant elements (as, for example, the clothes of the experimenter), every stimulus evokes an orienting activity on its own without any relation to the preceding one.

The second level is characteristic of older pre-school children (six to seven years old), and can be achieved also with younger children through means of verbal instruction and an active example. At this level the orienting activity becomes a systematic investigation determined by the characteristics of the stimulus objects. An ability develops to predict and prepare attention for the next stimulus. In the case of complex activities a third level may appear where the orienting reaction is further perfected.

Finally, at the fourth level, when the pattern of the activity to be performed has been mastered, the orienting activity is reduced, and loud speech, which accompanied the scanning, disappears. The orienting

reaction at this stage has achieved an image of the activity to be performed, or, in other terms, a program of the activity. The appearance of the image in the subject is noticeable by his outward behaviour, his reactions become prompt and sure (1957b, pp. 330-331).

Developmental phases were observed also in the methods of orientation. Younger children needed to touch the objects and to follow their contours with fingers. At the second stage it was sufficient for the children to follow the outline of the object in the air, from a distance. Finally, for six to seven year olds eye movements sufficed. But when older children were confronted with a novel task, they again reverted to the touch (Ibid.).

An orientational factor was found even in quite automated motor habits (1958a, p. 288). It was found also that the orienting activity alone was not sufficient for the fullmastery of a motor habit. The orienting reflex only serves for the achievement of an image, but only practice secures a perfect execution of the action (1957b).

The general conclusion Zaporozhets drew from the experiments was that orientation is the most important component of the reflex process, and that an orienting activity which results in an image both of the objective situation and of the activity to be performed, is clearly a mental activity (Ibid., p. 333). Thus, though using

a physiological terminology, Zaporozhets constantly emphasized the specifically psychological nature of human activity, not the neurological or musqular processes not reflexes, but the activity of the mind, qualitatively different from physiological phenomena.

The Second Signal System. Another term from Pavlov's later period, which lent itself to psychological interpretations, was the concept of a second signal system. The first signal system, according to Pavlov, includes all sensory stimuli, proprio- and extraceptive. The second signal system includes all stimuli which serve as signals for the primary sense stimuli. Pavlov mentioned, in passing, that the second signal system could be treated as synonymous to speech (1941). Soviet psychologists who were much interested in speech, agreed with that definition, and did not generalize the term to all symbolic expressions. But even thus the second signal system gave them a legitimate opportunity to study effects of speech. From speech there was only one step to thinking. It was fortunate for the psychologists of the conformity period that Pavlov experimented with dogs who can be made to react to verbal instructions, and that during his last years Pavlov became interested also in human psychology. If Pavlov had experimented with rodents, during the conformity era, Soviet psychologists would have had no outlet for psychological studies.

Zaporozhets uses reporting his second signal studies as an opportunity for stating his view of child development in Vygotskian terms: "The mental development of the child takes place by way of mastering social experience in the form of practical skills perfected by mankind, of scientific knowledge, of ethical norms of behaviour. This process is determined by an immediate influence of the child's environment." But (here he is a turns to Pavlovian terms) during the child's development, verbal intermediate signals acquire a predominance over immediate signals. A change in the relation between verbal and non-verbal behaviour of the child occur at the same time (1953a).

In general the young child reacts mainly to sensory stimuli and can be instructed best by example. The older the child grows the more predominant the role of verbal instruction becomes. However, this does not mean that a young child relies solely on direct signals. A child under three years of age can follow verbal instructions easily when they concern elementary habitual actions, but finds it impossible to follow verbal instruction in the case of a novel action (Ibid., p. 139).

In experiments (carried out by Dimanstein, Yendovitskaya, Neverovich, and Kisliuk) children were to perform gymnastic exercises, or to pick cards of a certain geometric design, or to handle simple tools, and

so on. In all experiments the actions were demonstrated to the child and the child was also asked to carry out actions following verbal instructions, and the child's performance under the two conditions was compared. All preschool children performed better when following a demonstrated example of the action. Children under four years of age could not follow verbal instructions at all, whereas seven year old children performed nearly as well by verbal instruction as following an example (1953a; 1954). It was found also that where simple movements were required, as pushing buttons, and so forth, verbal instruction was quite effective with younger children. Whereas in the case of complex reactions to complex stimuli, even with seven year old children, an example was much more effective than words (*Ibid.*).

Specially studied was the relation between the orienting activity and the second signal system. In studying the orienting reaction it was found that orientation became more systematic and relevant to the task in hand when a connection was formed with language, words used by the experimenter, or words used by the child himself, first in loud tones, then in inner speech (1957b). In studying the second signal system it was observed that children followed verbal instructions much better if previous to the action they had a chance for some orienting activity, scanning, touching, or manipulating,

or simulating the anticipated movements in the air. Younger children performed best when they had a chance both for vision and for movement. With older children (seven years old) vision alone was sufficient to improve the performance on verbal instruction (1954; 1953a). The orienting activities preceding an experimental task took place either on a suggestion of the experimenter or, in other experiments, spontaneously. It was observed that children who had a high spontaneous orienting reaction were the best in obeying verbal instructions (1953a, p. 147).

The conclusion was that the orienting activity had a decisive influence on the relation between the two signal systems in the preschool age. In summary, Zaporozhets stated the formation of voluntary, mentally regulated movements takes place in the following way. At an early age the control of motor activities is realized with the help of an orientational activity. The latter, first, has the nature of a motortactile investigation. On this basis later a visual, more economic orientation develops. When the child acquires stable and relevant stereotypes of orienting reactions, it is ready for higher forms of movement regulation. These stereotypes are associated with words. After that they can be actualized with a direct perception of objects. Then "the words of instruction, or of self-instruction, evoke a mental investigation

of the situation and a mental anticipation of the action to be performed" (1954, p. 66; 1953a, p. 114).

Thus, once again Zaporozhets led the study of muscular activity to a stage when it became the study of mental activity.

Motivation. Pavlov in the discussions of his last years stated that "voluntary acts are the results of an afferent incitation by our subjective perception" (1960a, p. 151). This statement gave grounds for regarding the discussion of motives as not unorthodox.

Zaporozhets' concept of motives is a developmental one. He criticizes the view of depth psychology that needs and motives are innate. Zaporozhets states that motives reflect needs which emerge in the process of living and depend upon upbringing and social conditions (Ibid., p. 140).

Already in the study with wounded soldiers Zaporozhets observed that an activity which resulted in a socially valuable product was connected with the highest motivation. In an experiment with preschool children (conducted by Neverovich) they were to prepare little flags. When flags were made solely for the sake of activity, children between three and five years of age did not show any motivation to complete the work, only some of the five to six year olds finished the

flags. When they were told that they will keep the flags for their own use, the three to four year olds still did not complete the task, but some of the four to five year olds and most of the five to six year old children did. But when the children were told that the flag was to be a present for another child, one hundred per cent of the four to six year olds completed the task and most of the three to four year olds. The same children eagerly prepared a doily for mother. But when the children were told to make a flag as a present for mother and a doily for another child, this did not make sense to them, and the performance was poor. The execution of the flags became very primitive also when the flags were to be used for a game (Ibid., pp. 141-143). No analysis was made of the experimenter's attitudes when giving instructions, and of their suggestiveness.

In another experiment (by Ginevskaya) children had to reach for an attractive object by jumping over an obstacle. It was observed that when the object was too attractive and the motivation too strong the movements were inhibited. Younger children stated that they cannot jump, though they could jump well before that, and wanted to get the object by wheedling or by means of direct stretching for the object (Ibid., p. 148).

The role of reinforcement was also studied (Pavlov had stressed the role of reinforcement). In a Tsvetkova

experiment, where children reacted by pressing some keys, three kinds of reinforcement were used: (a) candy, (b) showing of interesting pictures, (c) verbal praise. The three to four and a half year old children were motivated most by candy and least by praise. Four and a half to six and a half year olds were motivated most by praise, four and a half to five and a half year olds least by pictures, five and a half to six and a half year olds least by candy (Ibid., p. 149).

Zaporozhets' conclusion is that conditions of activity do not influence performance of movements directly, but through the reflection of these conditions in the mind, transformed by subjective factors (Ibid., p. 151).

A Pavlovian Summary. Zaporozhets' work of many years on voluntary movements was incorporated into his weighty doctoral thesis. All previously described experimental studies are incorporated into it and many new ones are added, including studies of a physiological type. Altogether about fifty experimental series are mentioned. The overview of literature is extensive. Among the 429 references there are also eighty-four Western sources quoted.

The central problem of the work is to clarify the origin of voluntary movements. The theory is as follows. On the lowest biological level movements consist of

unconditioned reflexes which are evoked solely by external stimuli and serve the purpose of adaptation to life conditions. At a higher biological level the total life situation becomes so complex and the necessary reactions so varied that simple mechanical reactions no longer serve adaptation purposes. Then in addition to unconditioned reflexes, conditioned reflexes are formed, which are based not on permanent, but on temporary connections within the higher nervous system. And in the reflex itself two components appear: an orienting phase and an executive phase. The orienting part is a system of investigatory reactions aimed at analyzing the conditions of a given situation and establishing an image both of the situation and of the action to be taken. On the animal level and with very young children such an image remains chaotic and approximate, and the orienting activity can regulate only those systems of movements which have been formed through long practice and experience; the primitive form of orientation is not able to evoke new forms of movements or reactions. But on the higher human level the image becomes clear to the extent that it gives a true reflection of the given situation and an anticipatory program of the action to be taken. Such a perfected image can be achieved only with the help of the second signal system, that is, of language, which consists by Pavlov's definition, of signals for primary

signals. These secondary signals through generalization stabilize the chaos of primary signals and produce recognizable units. These units help to single out the relevant elements of the situation. The second signal system, moreover, is a social product. Through it the experience of mankind is transmitted to the growing child. Forms of movement control are learned by the child partly by imitation of the actions of the adults in his environment. But a perfect control of movements can be achieved only by means of verbal instruction, first through the instruction of an adult, and later, when the adult's instructions are internalized, through self-instruction (1960a).

In this theory Zaporozhets achieved a smooth synthesis of the theory of Pavlov and Vygotski. One wonders whether Zaporozhets' five years of silence were filled with a bitter struggle to combine these two theories? Or was it an easy transition, a willing one? One cannot answer that from Zaporozhets' writings. Other Soviet psychologists at present begin to admit that in the last years of Stalin's reign "creative initiative was fettered," "dogmatism prevailed" (Shorokhova, Mansurov, and Platonov, 1963, p. 73), that few books on psychology appeared then (Syrkina, 1955). Zaporozhets has not declared himself in such a way. But one can state that in 1948 there was no trace of Pavlov's ideas in Zaporozhets' writings.

But in 1953 he emerged as a full Pavlovian in form, though still a Vygotskian at core. It is a fact also that in the 1960's Zaporozhets is gradually shedding off Pavlovianism, very little of Pavlov remains in his writing. This seems to indicate that Pavlovianism was imposed from outside on Zaporozhets. But it also seems that the effort of reorganization of principles was very intense and deep-going, so that later it took time to overcome the Pavlovian thinking. In 1954 Zaporozhets was still such a staunch Pavlovian that in reporting about the XIV International Conference of Psychology, he took a great exception to G. Razran's "non-scientific, radically false" interpretation of Pavlov's theory (1955b). In the English version of the same report all derogatory remarks and adjectives concerning Western psychologists were omitted (1957a).

Other Soviet psychologists had to go through the same transformation. Some submerged in Pavlovianism and became physiologists. The Georgians closed their oyster shell and persisted in working in one area only. But many of the Moscow and Ukrainian psychologists preserved their wider psychological interests and with great fortitude tried to keep psychology a distinct discipline.

Already in the later 1950's voices were raised against the restrictions of Pavlovianism. Some Soviet

psychologists working in the field of sensation claimed that Pavlov's own research showed that it is impossible to reduce human behaviour to reflexes alone. Others rejoined that there is no need to drag in Pavlov. Pavlov was not studying human consciousness, neither was for him the higher nervous system analogous to human behaviour. It would be very thoughtless for psychologists to regard the physiological study of the brain as a solution for the grandiose problem of the functioning of the human mind (Mogendovich, 1957, p. 5). But an orthodox Soviet psychologist became very annoyed by such discussions and declared that the reflex theory will remain unshakable in psychology. Further development in psychology can create new and better methods, but these will only enrich the reflex theory, not destroy it (Yaroshevski, 1958, p. 77).

Some ways out of the Pavlovianism dispute for Soviet psychologists were to work in new fields, like cybernetics and using the computer model. They need quite new principles. In educational psychology Pavlov can also be avoided by recourse to Makarenko (1961, 1962b). But the areas of motor activity and of perception are still committed to Pavlovian interpretation.

ZAPOROZHETS' WORKS ON COGNITION

Thinking

Zaporozhets' studies on thinking were the first he published. Later he only summarized his early research (1953b; 1956b; 1964a). The early period of Zaporozhets was pre-Pavlovian, clearly Vygotskian, and rather Piagetian. One of Zaporozhets' earliest studies was a replication of Piaget's (1951) study on floating objects. The experimental design was nearly the same as in the Canadian replication (Laurendeau, 1952). Children of three to seven years of age were presented with an assortment of wooden, metal, and plastic objects. They had to predict whether an object will float or not, and their reasoning in support of the prediction was recorded. Then the children threw the object into the water and their reactions to unexpected results were recorded (1964a, pp. 232-235). The reasoning of the Ukrainian children was of exactly the same kind as that of the Swiss and Canadian children. "The match will not float, because it cannot swim," "The pin will float, because it is so small," "The tin can will go under, because it is iron," and so on. Differences in the way of reasoning at different age levels were noted, from the primitive answers of the three year olds ("It does not float, because it does not stay on water") to the more logical answers of

the seven year olds ("The can is of iron, but it is hollow; therefore it floats"). But the children's answers were not classified as "precausal, magical, animist, dynamistic, and moralistic" (Piaget, 1927b; 1930). On the contrary the main emphasis was given to the fact that a young child is capable to learn logical reasoning under proper direction. "One can observe children of the middle preschool age using relatively complex reasoning and taking into account all new data which emerge during the solution of a problem (~~1964a~~ 1953b, p. 124). In a less official and later edition the statement is more qualified: "of course, those concepts which the child uses in his reasoning are far from perfect and differ from concepts he will acquire later in his science course. Still they represent a generalization based on the observation of facts . . . gradually he will learn to think, and to bring his opinion into agreement with that of others and with reality" (~~*Ibid*~~ 1964a., p. 235).

During the same period Zaporozhets studied the sensory-motor thinking of deaf children. The three to seven year old deaf children were given simple mechanical tasks. Zaporozhets' conclusions were Piagetian and diametrically opposed to Zaporozhets' later standpoint that it is the second signal system which gives the child power of generalization and forms the basis of intellectual activity (1953b; 1956b). In his early study

Zaporozhets found that "the content and structure of the actions of a deaf child not taught speaking differ fundamentally from that of animals." If using his experience of handling everyday objects the function of which has been laid down by society, the child learns to disregard external similarity of things and to generalize objects by their functional indications. Functional concepts formed on this basis have a specifically human character. They lead the child to generalizations and to the perception of relations, and this new power of generalizations "serves as a prerequisite for learning speech" (1964c), p. 221).

It is significant that Zaporozhets expresses the view that language is the basis of thinking in an official type of writings--a report meant for foreign consumption soon after the "thaw" (1956b), and an official textbook of psychology teeming with quotations from Stalin (1953b). This textbook gives a very characteristic example of the exegetic method: each important statement is followed by a quotation from some Soviet authority. Here are some examples:

> . . . Word has the decisive role in the formation of concepts. "Each word already generalizes," says Lenin (1953b, p. 117).
>
> - - Language . . . is the necessary foundation of human thinking. "Whatever thoughts appear in man's head," says Stalin, "and wherever they appear, they can originate and exist only on the basis of language material" (Ibid., p. 117).

> - - Communication between people by means of language--which makes up the second signal system according to the teaching of I. P. Pavlov--brings in a new principle into the human higher nervous activity (Ibid., p. 118).

But when Zaporozhets in freer conditions, in 1964, summarizes his early work, he has no longer need for exegesis, he relies solely on experimental results. He states that some psychologists who "are inclined to assign to speech the role of primary cause in the child's intellectual development" are completely wrong. "Verbal statements of a preschool child in solving practical tasks can assume an organizing function only when the word meaning refers to an already generalized experience gained in manipulating the objects in question" (1964a, p. 220).

In an early experiment Zaporozhets let preschool children handle simple machines, levers, blocks, and their combinations. He found that "the formation and application of generalization in the early stages of development of thinking is inseparable from the solution of practical tasks" (Ibid., p. 216). He concluded that it is wrong to consider the role of speech in development in isolation, disregarding the general character of the child's activity (Ibid., p. 221).

Another early experiment was carried out in order to verify Luriya's statement that a child can follow a

verbal instruction only when this does not contradict the logic of the child's everyday actions. It was shown that three to four year old children could well carry out an order to "put the lid on the inkwell," but could do nothing when told to "put the inkwell under the lid." Thus, says Zaporozhets, language "trails along behind activity" (Ibid., p. 211).

In an experiment children were asked, before going over to action, to explain how, why, and what they will do. It was found that with younger preschoolers such a verbalization had no effect on the action, and at a later stage action had effect on verbalization.

Under Zaporozhets' direction an experiment was carried out using the "transfer method" (that is, subjects had to transfer solutions from one problem situation to another). Children had to solve problems concerning handling of levers, (a) after actual manipulation, (b) on the basis of drawings, and (c) by verbal description. All children between three and seven years of age could find the solution best after manipulation, and worst by verbal description. Children between three and five years of age could give no solution on the basis of verbal information, and very few of the five to seven year olds could. On the basis of this experiment developmental stages in thinking were described: (1) visual-active stage, (2) visual representational thinking, and (3) verbal thinking (Ibid., p. 223).

In the 1964 report on this early experiment Zaporozhets makes use of the Pavlovian term "orienting reflex" (but the term "second signal system" is nowhere mentioned). Zaporozhets stresses the importance of a preliminary investigation before problem solving. Making use of the findings of his later experiments he lists the types of orienting activity: (1) chaotic investigation, (2) centering on the result of the task, (3) taking into consideration also the means to be used, and (4) visual investigation taking into consideration the whole situation. The fourth stage, says Zaporozhets, is very close to the solution of the problem (Ibid., pp. 223-224).

Zaporozhets disagrees with the standpoint that preschool children's thinking lacks logic. Quoting Vygotski he states that the child has a functional logic of his own. The child is not unable to see correct relations, but he ignores them, because he is not interested in such relations. In a Zaporozhets' directed experiment children had to find similarity between a certain fable and some short stories. Children found that most similar to the fable was a story which described the life of the same animals that appeared in the fable. When the experimenter asked them whether another story had not more similarity with the fable, the children promptly pointed out the moral common to both the story and the fable. But still they insisted that the

natural-history description had more in common with the fable, because it told "what happened later to the animals."

Several other experimental series are reported. It seems that this early period of Zaporozhets, dominated by the influence of Vygotski and Leontiev, was a time of enthusiastic experimentation guided by an irresistible scientific curiosity and great attraction to young children.

Zaporozhets' conception of thinking is of a dynamic continuous process beginning from zero. "A newly born child has no thinking power" (1956b, p. 2). Though certain physiological predispositions are innate, the intellectual abilities are not. They develop in concrete life situations, through the child's activities. At the basis of generalizations is the child's manipulation of objects and the functional meanings given to objects by the adults of the child's environment. On the basis of the generalizations achieved through activities language can develop. Later language and activity constantly interact in influencing the thinking. There is a certain rhythm of mental maturation, which gives at each age level different characteristics to thinking. But this rhythm can be accelerated by placing the child into situations where he has a chance for playful experimentation and where he is obliged to transfer problem solutions

from one situation to another. The child's thinking begins as a chaotic trial-and-error procedure, but the more systematic his orientational investigation of the situation becomes, the greater is the child's thinking power. But always the child's thinking is determined by his total mode of life and by the influence of his social environment.

During the conformity period Zaporozhets' activistic concept of the development of thinking was narrowed down by the super-imposing of the concept of the second signal system. Language had to be regarded then as the factor which freezes sensory input into stable concepts and as the sole basis of thinking. The fact that Zaporozhets in the freer period so soon discontinued using the term "second signal system" seems to indicate that this concept was an imposition on Zaporozhets' thinking from outside.

Perception

Zaporozhets' study of perception has more traces of Pavlovianism than his study of thinking. Sensory perception is an integral part of the reflex in Sechenov's and Pavlov's theory. Adopting their view, a study of voluntary movements seen from another angle is a study of sensory perception, only refocussing is needed. And that is how Zaporozhets proceeded when he turned to the study of perception. He could incorporate into the

report many of the studies on voluntary movements, especially those on the orienting reflex. He was able to report new investigations on the orienting reflex, as, for example, Zinchenko's "kinoregistration," a cinematographic recording of investigatory eye movements. And a Pavlovian theory of perception was there (1960b; 1962a).

Zaporozhets states that there are two theories on the origin of perception: (1) phenomenalistic theory; it regards the subjective experience as primary and ignores the activity of the subject and his relation to the object; and (2) materialistic theory, based on the teaching of Sechenov and Pavlov; it takes into consideration objective conditions and studies the role of activity in the formation of a reflected image of reality (1960b, p. 326; 1962a, p. 77). The activistic element which Zaporozhets places into the "materialistic" theory makes it much more dynamic than the original Pavlovian theory.

After recounting again the stages in the development of the orienting activity, Zaporozhets states the problem: why does tactile investigation come first and visual investigation last? The explanation given is as follows: The hand is a contact receptor; it depends more immediately on the features of the object in its investigatory movements, always running against the resistance of the object. The eye is not only free to skim over the object in any direction, thus not necessarily reproducing

the correct shape of the object; the eye is also the "theoretician," it does not take part in the execution of an activity like the hand does (1960b, p. 329). "The hand begins the instruction of the eye in the process of solving practical problems" (1962a, p. 80). Later the eye becomes a leader. The changes in the leading role, first of the hand and then of the eye, are not a simple process, but full of complications and contradictory stages (1960b, p. 39). When the eye finally takes over the role of the planner it changes the investigatory stage of action into a short-cut procedure (1960b; 1962a).

In his most recent summary of his research on perception Zaporozhets emphasized, besides the role of orienting activity, the importance of "external material activity." ". . . Perception is a specific exploratory action through which the object is investigated and its image, its model, is created. Initially this action is an external, physical action which is formed under the influence of practical experience in making certain transformations in real object situations. After certain consecutive changes and reductions it becomes an ideational action, a movement of the focus of attention along the field of perception. At this stage perception takes the form of sheer contemplation, the opposite of action" (1966b, p. 65).

Sensory Development

The term "sensory learning" has two meanings for Zaporozhets. In one meaning it is synonymous with the term "orienting activity" (1962a, p. 327). In another meaning, it is a statement about the properties of sensory cognition.

For Zaporozhets, and other Soviet psychologists, sensory abilities are not something stable, innate, and unchangeable, but something that can be increased and improved. They prove in practice that this can be done. What they actually improve through training is sensory perception and sensory discrimination.

Much attention has been given to the training of the "musical ear." Zaporozhets states (1963) that for the development of musical creativity it is most important to develop a good tone discrimination. The discrimination of timbre and of the dynamic aspect is secondary to the discrimination of relative pitch. "The reactionary standpoint" abroad that discriminating pitch is an innate, ability is rejected. Anatomical-physiological dispositions may be innate, but abilities are formed in interaction with external conditions, especially with the social environment. As an example the case of the Vietnamese is cited among whom there are no tone-deaf children, because their language is tonal and the discrimination of pitch has to be acquired early (Ibid., p.189).

For the formation of the ability to discriminate musical tones, a musical environment is very important, but it may be helped by systematic education. To explain the development of tone discrimination Zaporozhets reverts to the use of the Pavlovian concept "orienting activity." He explains that until now the orienting reflex was studied only in connection with the tactile and visual sense. Now the same study is in progress concerning the auditory sense (by Zaporozhets, and already earlier, by Leontiev). Teplov and W. Koehler abroad have pointed to the role of motor components in musical perception. Experiments have shown that vocalization helps discrimination of tones. Zaporozhets explains that laryngual movements are modelling the tone heard, in the same way as fingers feel and eyes follow the contour of an object perceived. Thus the movements in the larynx serve as an orienting reaction. Just as with other sense modalities, the need for muscular movements is reduced when the discrimination ability is perfected. Zaporozhets is aware of the vicious circle which arises in actual training: vocalization requires tone discrimination and tone discrimination requires vocalization. But studies are in progress to overcome this difficulty. The present hunch is that other movements in the child may help the musical training.

During the experiments it was discovered that the

mechanics of tone discrimination are basically different from the mechanics of recognizing a tone in the formation of conditioned reflexes. When a conditioned reflex is formed a "filtering analysis" takes place which rejects all types of sensory input, except the relevant one. But in the discrimination of musical tones a comparative process is needed where two objects of perception have to be modelled, the second modelling being an imitative process of the first, and then the two perceptions have to be juxtaposed (1963, pp. 186-195).

Thus Zaporozhets in his study of sensory perception still uses the Pavlovian model of thinking, but he is making a more subtle analysis of the phenomena.

ZAPOROZHETS' EDUCATIONAL PSYCHOLOGY

Concept of Education and Its Goals

Education for Zaporozhets and other Soviet psychologists is not an external factor influencing development, but an integral part of the total process of development. The growing child is inseparable from the groups of people in his environment and the organized society of which he and the people of his environment are a part. A child as an isolated unit is a fiction, just as it is a fiction to regard the child's mind as a sum of stable, innate, and unchangeable abilities. The child's mutual growing is not a process which follows a predestined course of

maturation. It comes about through the child's interaction with objects and other people. In the beginning the child's contact with parents is most decisive, later with other adults and peers. Through adults the child acquires short-cuts for his exploration of the world.

Thus for Zaporozhets education is something which is always there. But when a child is left alone he is exposed to the influence of random, unsystematic interactions. Therefore organized education which is based on a thorough knowledge of the nature of the child's development is to be preferred. Children may differ in their capacity to absorb social experience, but every child is capable of some mental growth when his education is properly organized (1961; 1962b; 1964b; 1964c).

Reading Zaporozhets' works one receives the impression that goals of education are immanent to the educational process: to give each child, according to his dispositions, the maximum chance to develop his abilities, to develop the child into a versatile personality able to cope with practical situations and able to receive deep enjoyment of life.

One may ask about the role of the state in setting up goals of education. But Zaporozhets and other Soviet psychologists never use the word state. A convention seems to exist that the Soviet Union is not a state, but a community of mankind. Zaporozhets will use the term

collective group, society, and, yes, "building up communism" (1961), but not state. He quotes Khrushiov saying that there is no difference between building up communism and the education of children. "We solve here two historical tasks: the creation of a material technical foundation of communism, and the education of a new man. In essence this is one process" (Ibid., p. 17).

The official statement of the aims of communist education reads also like an educational program per se: "a goal-directed upbringing of highly knowledgeable persons, developed in an all-round way and combining harmoniously a spiritual richness, a moral purity and a physical perfection." To these high-flown goals is added: "In the process of education a formation of a Marxist-Leninist outlook and of a communist personality take place" (Pedagogicheskaya Entsiklopediya II, p. 458).

When Zaporozhets discusses educational programs (Zaporozhets, 1961; 1962b), he uses the same terms. The more explicit goals Zaporozhets mentions are also the same as the official program of communist education: developing a love for work, a skill for living in and for a collective group, a respect for adults, developing creative talents, both technical and artistical (Pedagogicheskaya Entsiklopediya II, Zaporozhets, 1961; 1962b; 1964b), and, Zaporozhets emphasizes, "securing a happy childhood to each child" (1962b, p. 18; 1964a, p. 3).

Since a decree of 1961 a great emphasis is placed on the moral upbringing of children.

The particular goals of Zaporozhets' department, the preschool education is (1) laying a foundation for the attainment of goals listed in the preceding paragraph, and (2) preparation for school education. His task as a psychologist is to find the correct means for the attainment of these goals. A 1959 decree has drawn special attention to preschool education, its expansion into non-urban areas and the bringing of day nurseries and kindergartens under a unitary system was decided.

Educational Methods

The official statement is: "Communist upbringing does not tolerate drill, regimentation, or formalism. It is carried out by methods encouraging the spontaneous activity and initiative of students" (Pedagogicheskaya Entsiklopediya II, p. 463).

Of the spontaneous activities in preschool education Zaporozhets gives the foremost place to play. First, because play is the "leading activity of the developmental stage of preschool age (1964b), and, second, because of the educational value of play. Play "gives the child the possibility in a fascinating way to get acquainted with a wider range of happenings in his environment and to re-create them in his own activities" (1964c, p. 802). Zaporozhets values most the thematic (sujet) play in which

the child reproduces the activities of the adults of his environment. In such a re-creation the child is able to feel and understand his environment deeper (Ibid., p. 802). Zaporozhets considers a skilful guiding of children's plays very important. Left alone children play repetitive games poor in content and not conducive to the correct understanding of the reproduced events. But Zaporozhets is against a regimentation of children's games (1964d, p. 163). The development of children's initiative is important. Games should be guided subtly through stimulating suggestions by the educator and by creating systematical conditions conducive to evoking the children's imagination and self-activity.

Besides play, Zaporozhets stresses also the role of genuine work tasks in preschool education. Little duties, as cleaning, caring for flowers, distributing things to other children, must develop a sense of responsibility and duty in the child, a respect for work, consideration for other members of the collective group, and an urge to do something useful for the sake of other people (1964c; 1962b). The formation of a collective spirit in the children does not present a serious problem for Zaporozhets, because "Soviet educational science has debunked the pseudo-scientific bourgeois concept of the basic egocentricity of the child" (1962b, p. 21). This is the only place where Zaporozhets is not consistently developmental.

All other abilities of the child need careful training through interactions with reality, but the development of the social spirit needs little effort, it is there from the beginning (compare experiments on motivation ~~by~~ in 1960a).

Zaporozhets gives much emphasis also to "sensory education." This is a comprehensive term involving a training of sensory discrimination of colours, shapes, musical tones, even smells (1953b, p. 48), and also of esthetical judgment, of "a genuine artistic taste" (1962b, p. 8). This is carried out mainly through creative exercises in drawing, modelling, musical performances, and so on.

Zaporozhets is also against overloading games with "didactism" (1964d, p. 62). "Play is not only a means of developing the child's knowledge and skills, not only a way of preparing him for future activities, but it is the child's life itself" (1962b, p. 7; 1964d, p. 63). In the process of playing the child has a chance to make use of his previously accumulated experience, to satisfy his needs and interests, to establish new relations with reality. Play develops the child's emotions and intellect, and is the main setting for a comprehensive development of the child's personality (1964c).

This "life itself" principle reveals Zaporozhets as a true existentialist (though he never uses the word

"existential"). He sees education through play as a total life activity in which the actions themselves are simulated, but the emotional involvement, the perception of social and objective relations, and an overall engagement of the child's personality are deep and real.

One would suppose that an educator who has to guide such a play must, too, have an existential empathy with the child's mind and activities. But Zaporozhets is not conscious of his own existentialism. Instead, he stresses the need for a systematic analysis of the child's developmental process (1961).

In connection with the creative development of the child Zaporozhets' view of the role of fairy-tales in child development is of interest. Zaporozhets expresses himself strongly against the "false idealist bourgeois" rejection of fairy-tales on the basis of a "crude utilitarianism" (1948a, p. 34). Actually, bolshevist authorities were initially against fairy-tales. And as the particular article (Ibid.) was written during the time of conformity, it was rather bold of Zaporozhets to defend the use of fairy-tales in education.

Zaporozhets states that listening to or inventing of fairy-tales has the same role in the child's development as play. It develops the child's imagination, which is an important premise of intellectual activity. And it gives the child an opportunity, through identifying

himself with the hero, to experience, or experiment imaginatively with various life situations and human relations. The child learns to distinguish relevant features of a situation. Even when the fairy tale situation is a complete reversal of reality the child compares it with true facts and so learns to distinguish the basic relations in reality. If the fairy tale is truly artistic and grips the imagination of the child, it places him "inside an event" (1948a). Here Zaporozhets again reveals an existential approach to children.

Zaporozhets also states that in appreciating fairy-tale fantasy a child is not drawn into egocentric daydreams: but, on the reverse, forgets his self in reliving adventures of others, thus learning to understand other people better (Ibid).

The discovery of methods for the new goal of moral education is still in progress. Zaporozhets stresses only that the role of verbal instruction in moral development has been until now exaggerated.

Soviet preschool education has also the goal to prepare children for regular school and includes the teaching of reading, writing, and arithmetic to six year olds. Zaporozhets does not discuss methods in these subjects. But he enjoins kindergarten instructors not to concentrate on academic-type learning activities to the detriment of play and creative activities. Zaporo-

zhets regards the creation of a "joyous, friendly, and creative group of children" (1962b, p. 6) to be the main goal of preschool education.

There is yet little chance to compare the educational practice and educational theory in the Soviet Union. In all countries statements about educational goals and progressive educational literature are always far in advance of educational practice. Foreign visitors to the Soviet Union are admitted to show-schools which very much correspond to Soviet ideals. But only quite recently have foreigners been admitted to some institutions in smaller cities and not yet to rural areas.

In contrast to earlier Soviet insistence on state education as the sole correct form of upbringing, now, in educational periodicals, the talk is often about parental education. Probably the state now trusts families assuming that they have adopted attitudes acceptable to the state. Anyway Zaporozhets is of the opinion that education in families lacks deliberate planning (1961, p. 19) and therefore a well organized kindergarten can offer a more effective education.

Role of Research for Education

The Research Institute of Preschool Education directed by Zaporozhets has many rese~~rve~~arch activities in progress. The Institute's main goal is to create a

foundation for an improved Preschool Education.

The work of the Institute takes place through conferences, symposia, and seminars where the focal problems are discussed. But the main work is done in various laboratories led by psychologists like A. P. Usova, Y. Z. Neverovich, E. I. Radina, V. G. Nechayeva, N. P. Sakulina, N. A. Vetlugina, and others, under whose direction assistants work (Gulutsan, 1964; Zaporozhets and Makarova, 1966). Besides laboratory experiments also observations of children are used, natural experiments, synthesized characteristics of observed behaviour, and complex studies where the co-operation of either of educators, or of physiologists and medical scientists is used.

In the laboratory of experimental didactics not only the effect of various teaching methods is studied, but also an extensive research into sensory education goes on. It was shown experimentally that direct training of sense perception, as in the Montessori system, has less effect than training through creative and constructing activities, as drawing, modelling, technical model construction, didactical games, and so forth.

But another series of experiments showed that children can profit much from direct training of perception, if it is specially organized. Children were taught to use sensory standards, like basic geometric

forms, a scale of colours, a musical scale, linguistic phonemes, and so on. The standards were presented in the shape of strips of coloured paper, cut-out geometrical shapes, and so on, which could be directly superimposed and compared with sensory qualities of other objects. Thus an external prototype of the ideational perceptual operation was created.

A simpler method was to draw the children's attention to relevant elements of the object's shape, as angles, sides, and let the children name and count the salient features of the object.

On the basis of information theory it was explained that the use of sensory standards, or recounting of salient elements, is a form of sensory encoding, and serves later for a sensory decoding of perception.

On the basis of earlier research concerning the orienting reflex new experiments were designed. The results of these showed that a tactile acquaintance with the contour of an object not only helped visual perception, but obviated diffuseness, syncretism, and globality of perception, which Western psychologists claim are characteristic of children's perception, Piaget for one.

Considering all these findings, it was concluded by the institute staff that the development of perception through instruction is possible.

The institute includes also a laboratory of pre-preschool child development (of children under three years of age). At this laboratory the development of children's speech was studied and their general development. On the basis of these studies it is hoped to put an end to retardation in speech and thinking of children brought up in state nurseries. The formation of habits and of simple skills was also studied with the very young children. In connection with the speech development its dependence on the child's relations with the adults was studied.

Various didactical games have been devised. In such games the child, on a visual basis, has to discover relations between objects, then to apply the same relations in a new situation, and eventually to achieve generalizations.

Older preschool children are studied in connection with the preparatory instruction for school work.

There is a special laboratory for the study of moral development. It studies the ways how industriousness, respect for elders, and friendly relations with other children develop. The content of ethical norms was analyzed, and it was found that there was a trend to impose on children complex moral norms the content of which did not correspond at all with the child's life experience. Attempts are made to define

quite simple norms of behaviour which the child can understand and practice. The form of the child's relations with peers, adults, and with children of differing ages are studied. Also the child's attitudes to duties, his ways of handling things and his hygienic habits are studied. It is attempted to establish a relation between all these aspects of personality.

Makarenko's principle that practicing ethical deeds is the most effective way of acquiring ethical norms is considered important. Special games were devised in which children could practice ethical deeds within a kindergarten collective. The effect of praise or censure by educators or peers was observed, and emotional attitudes were analyzed.

There is a special project for finding new research methods for studying moral development. The present attitude is not to hurry unnecessarily and to devise research methods only after a deep study. Much material is at present collected from educators, but the co-operation between teachers and psychologists in this field is not yet so close as in the question of teaching methods.

Another important laboratory is that of esthetical education. It was found that artistic development is correlated with intellectual and ethical development of the child. Forms of children's creativity are

analyzed, and methods are studied of stimulating artistic, musical, and literary creativity. There is at present a difference of opinion concerning children's creative ability. One extreme is to deny that children have any creativity, they are said only to be learning; the other extreme view is that the child should be left alone and develop creative powers spontaneously. The laboratory takes an intermediate view that the child is both capable of creativity and can be taught to create.

Problems of physical education are also studied at the Institute with the co-operation of teachers and physicians.

A special laboratory studies problems of cognitive development. Various forms of thinking and the relation between perception and voluntary movements are studied.

A special study is dedicated to the characteristics and role of play.

The Institute tries, in its work, to avoid the extremes of dogmatism and empiricism, of abstract theory unconnected with educational practice and of practical solutions without a theoretical basis (Gulutsan, 1964, pp. 5-6; Galperin, Zaporozhets, and Elkonin, 1963, pp. 63-65; Zaporozhets and Makarova, 1966, pp. 37-44).

It seems that conducting this busy research institute, is a work that gives A. V. Zaporozhets great satisfaction.

PSYCHOLOGICAL SYSTEM REPRESENTED BY ZAPOROZHETS

Zaporozhets' Works on General Psychology

Zaporozhets has written a textbook on general psychology (1953b). But as it was written by the end of the conformity period it is rather unrevealing. A large part of it consists of a summary of Pavlov's physiological principles. The book is gay with Stalin's *dicta*. Numerous tendentious remarks about the West decorate the book. Zaporozhets himself stated afterwards that this book cannot serve as a manual on child psychology, it was "only a textbook" (1964a, p. 4).

Recently Zaporozhets with D. B. Elkonin have published a two part manual on preschool child psychology (1964a and 1965). Each chapter is compiled by some specialists in a given field. Zaporozhets himself is the co-author only of the chapter on 'thinking'. The organization of this manual gives an indication which areas of study the editors consider relevant for child psychology. The first part (1964a) consists of the following chapters: 1. Sensation and perception; 2) Attention; 3) Memory; 4) Speech; 5) Thinking; 6) Imagination; 7) Movements and motor habits. The chapters of the second part (112) are: 1) emotions;

2) Will; 3) Play; 4) Beginnings of work activity; 5) Learning activities; 6) Development of personality.

No chapter is included on physiology or on the explication of Pavlov's theory. Even references to Pavlov are very scarce. The emphasis is again on solely psychological problems.

Though the book covers only the limited age period of three to seven year old children, from the standpoint of the psychological system which Zaporozhets represents this is the most important period of human development.

The Developmental Outlook

Zaporozhets' special area, the study of three to seven year old children, admittedly, has a practical purpose, to serve as an auxiliary science for preschool education. During Zaporozhets' recent period, when he moved into the area of educational psychology, all research done under his direction serves this practical purpose.

There are indications which make one suppose that Zaporozhets is personally also much fascinated by children of preschool age.

But Zaporozhets is not the only Soviet psychologist who has given his main attention to preschool childhood. It is only recently that Soviet psychology began moving into the area of adult psychology. The

physiological psychologists and the Georgian set psychologists, it is true, do their research without any predilection for a special age period. But the Moscow and Ukrainian psychologists who were inspired by Vygotski, always regarded the psychology of preschool childhood as the subject for psychological studies.

In 1955 K. N. Kornilov stated that it was a weakness of Soviet psychology to give too much attention to child and educational psychology (1957), p. 19). During the conformity period there seemed to be no other choice for psychologists who did not want to become physiologists. But already before this period Vygotski gave his main attention to preschool children just like Zaporozhets did later.

This predilection for child psychology is connected with the whole outlook of the psychological system to which Zaporozhets belongs and the concept of man which results from this outlook. Man in the developmental psychology is conceived as a dynamic, active, ever-growing, ever-developing unit, independent, but intricately interconnected with the total of dynamic, developing and active reality. The development of man's mind takes place in a constant interaction with objective, social, and cultural reality. The mental development begins from an absolute zero. In the first years of life the interactions between child and reality are yet few and only the

beginnings of mental processes are formed. Therefore the mental development of a child under three years of age remains difficult to study. Soviet psychologists have rather neglected the study of early childhood. Far from building up a whole psychological theory on the study of early childhood, like Freud did, Soviet psychologists only sporadically have undertaken some research with children under three (for example, G. L. Vygotskaya, L. Vygotski's daughter, studied the haptic reactions of infants (Zaporozhets, 1960a). Zaporozhets admits that "till recently the study of the early age period has been less intensive with us than the study of preschool children, and this task has temporarily been solved only to a partial, insufficient extent" (1964a, p. 10). ~~The~~ The temporary solution he refers to is, presumably, the early childhood laboratory at the Institute of Preschool Education.

Older children, over seven years of age, have been studied more in the Soviet Union, but mainly from didactic viewpoints, studying the children's learning ability. Only quite recently an interest has arisen for the period of adolescence, and that mainly in connection with the intensified interest in personality.

But a developmental psychologist is not so much interested in older children, whose personality already is acquiring stability and whose abilities have been

nearly formed. A developmental psychologist is not so much interested in the results of the development (though these are important, too), as he is in the observing of the actual process of development. In no other age period is the step by step development so visible as in the preschool age. In no other period is the development also so homogeneous, lending itself to the discovery of "laws" of development. The study of preschool children is the best means for building up a genetic psychology.

The term 'genetic' in the Soviet usage has, in most cases, nothing to do with the science of genetics. Soviet psychologists until recently have not been interested in prenatal origins of human development. For Soviet psychologists the word 'genetic' is, in most cases, synonymous with "developmental," and for Zaporozhets it is always so.

Zaporozhets is more interested in the "becoming" than in the "being" of the human mind. The preschool age is a steady becoming. "During the first seven years," says Zaporozhets, "the child passes through a huge part of his physical and mental development, . . . in the preschool period, not only an accumulation of various knowledges and skills take place, but also various abilities are formed, the shaping of character begins, and ethical characteristics of personality are formed" (1964a, p. 4).

From the Leninistic standpoint this period is also important, because the knowledge of preschool children's characteristics permits a deliberate molding of the personality, which is not so easy at a later period.

In the preschool children it is also possible, more than in other age periods, to perceive the realization of dialectic principles. Mutual interaction between the preschool child and his environment is well balanced. In the case of the very young child the environment is too strong. At a later age the personality becomes predominant. But the preschooler exemplifies best the principle of universal mutual interaction. And the speedy changes in the preschool child from year to year exemplify well the dialectic view of life as a constant process, dynamic, self-energizing, undergoing qualitative changes and aimed at constant growth. Thus the dialectic outlook in philosophy and the developmental outlook in psychology determine the importance given to preschool child psychology by Soviet psychologists.

Zaporozhets has been a developmental psychologist throughout his work. Even into the war time physiotherapeutic work, and into the Pavlovian system he brought a developmental approach. But he can apply best his developmental outlook to the study of the ever changing kindergarteners.

In his recent summaries of the process of child

development (1964a, pp. 3-12; 1964b; 1964c; 1965, pp. 3-6), Zaporozhets has again faithfully adhered to Vygotski's theory of development, in its dialectical, biological, and cultural-historical aspects. He added to it the only survival of his Pavlovian period, the concept of the orienting activity. The rest is an elaboration of Vygotskian principles. Only in his article for the Encyclopedia Zaporozhets mentions again Pavlovian terms and physiological psychology (1964c). A developmental characteristic which Zaporozhets has lately been emphasizing is the "leading activity." Each phase in the child's development, says Zaporozhets, is characterized by a leading activity. This activity is not the only one at each stage, but it is the predominant one. At the stage of early childhood this activity is manipulation of objects, at the preschool age it is play, and at school age, learning and feasible work tasks. But Zaporozhets stresses that for the understanding of the interrelation between the child's mental processes at each stage the nature of the child's orienting reaction can give a still better clue than the leading activity. The orienting reaction has a different structure at each stage and reveals the changes in the child's interrelation with his environment.

As the orienting activity (Zaporozhets mostly avoids the term orienting reflex) is viewed developmentally

by Zaporozhets, and conceived as an active dynamic process, it does not form a foreign body in Zaporozhets' developmental system of psychology.

Relation of Zaporozhets' Work to Other Systems of Psychology

The relation of Zaporozhets' ideas to the psychological schools of thought within the Soviet Union has been already established: he is a Vygotskian, who had a passing contact with Uznadzianism and temporarily was compelled to assume a Pavlovian way of thinking, but now has returned to the Vygotskian developmental system of psychology.

Among the non-Soviet systems there are two psychological schools with which Zaporozhets and other Soviet psychologists refuse to have anything to do: Freudianism and behaviorism.

The dislike for Freudian theory has obvious reasons. The Soviet emphasis on consciousness, their concept of development as a continuous process not to be frozen by a few early childhood experiences, their dislike of "metaphysical" explanations and their disinterest in sex problems, make Freudianism irrelevant to Soviet psychology.

The Soviet rejection of behaviorism is not so obvious for some Westerners. But epithets of Soviet psychologists are the most derogatory of behaviorism and

the S-R models. It is true that Zaporozhets, just like other Soviet psychologists, records only the external behaviour of his subjects. But the interpretation is different from that of behaviorism. The positivistic attitude which is at the basis of behaviorism is not that of Soviet psychologists. Not even Pavlov was throughout a positivist, but had his dynamic visions of life (1932). Neither is Soviet philosophy positivistic: Lenin's philosophical dicta are mostly picked from his polemical writings against positivists (1961a). Though Zaporozhets observes only the outward actions of a child, these are for him signs of internal mental processes. Even in muscular acts Zaporozhets sees an indication of an image formed and of a mental structuring of the situation, and the first phase of any movement, the orienting activity, is for Zaporozhets a predominantly mental act. Also Zaporozhets has no inclination to derive simple formulas of behaviour to be expressed by a few symbols. On the contrary, Zaporozhets is interested in the infinite variety of individual reactions and in the qualitative differences in the reactions at different age levels. Especially strange to Zaporozhets is a concept of the human mind without the vision of it as a dynamic, self-acting, developmental process intricately interconnected with the total dynamic process of life. For a Soviet psychologist the behaviorist concept of mind is dead and

empty. Zaporozhets states that behaviorism initially had a praiseworthy idea to study behaviour objectively, but eventually "returned to subjective-idealist psychology," because to separate consciousness from behaviour means to have an idealist concept of consciousness as a supramaterial entity (1960a, p. 27).

Of all North-American psychological schools of thought there is only one which Zaporozhets accepts without reservations and makes use of its terminology. This is the information theory. The mind encoding and decoding information is active and creative enough to fit into a dialectical concept of man (1957b, p. 328).

Many German psychological schools of his time had influenced the thinking of Vygotski, especially the Gestalt psychology, developmental psychology, and the Wuerzburg school, but Vygotski transmuted their theories in an individual way. As Zaporozhets has wholeheartedly adopted Vygotski's ideas, there are echoes of many German influences in Zaporozhets' thinking, but just echoes.

However, there is one Western psychologist with whom Zaporozhets has countless points in common, and that is Piaget.

Zaporozhets and Piaget

At a first superficial glance it seems strange that these two psychologists should have so much in

common. One is a Marxist psychologist, trained to conform to directives and official dogmas, working in a homogeneous group of psychologists "for the construction of communism"(1961). The other one is a citizen of a thoroughly bourgeois country, is personally a very great individualist not caring for any dogma or association with psychologists of other schools of thought, and is not even a psychologist, but a "zoologist by training, an epistemologist by vocation, and a logician in methods and terminology"(Piaget, 1953a, p. 75). One studies children for the practical purpose of improving education and for developing "communist personalities." The other strayed into psychology accidentally having become "highly suspicious of speculative philosophy," and wanting to devise "a genetic theory of knowledge" (Ibid., p. 32). Yet both stayed all their life in child study, have given their best in the study of preschool children, both are extremely fascinated by the peculiarities of young children's thinking and behaviour. Both are developmental psychologists in exactly the same meaning of the term: they study the child's development and each of its single mental processes step by step, discover a succession of intriguingly different stages, phases, and subphases, see the child developing in interaction with his objective and human environment. Both view development as a continuous dynamic process in which each moment of the present is determined

by the experience of all the moments of his past. Both see the child's mind beginning from a zero and throughout its development remaining active, stimulated to action first by external contacts and gradually becoming self-regulating. Both have some biological bias, and speak of adaptation to situations. Both regard the study of cognitive processes as the best means for discovering the nature of child development. Both use many identical terms, as sensory-motor development, phase, structure, internalization, and so on. Both study the child's mental processes by letting the child manipulate simple objects. There are countless similarities in the ideas of Zaporozhets and Piaget.

The similarity is not very miraculous. There were many links between Zaporozhets and Piaget. The main link was Vygotski, and a whole gammut of Continental-European philosophies linked Vygotski with Piaget. Piaget was initially influenced by Bergson's philosophy (Flavell, 1963, p. 2). In Piaget's concept of child development one can always recognize Bergson's image of mental life: the perpetual rolling up of the moments of the present onto the ever-growing reel of the past, each moment of the present being influenced by the total of past experience. This view of a snowballing experience is common both to Piaget's and Vygotski-Zaporozhets' ideas, only both have superimposed on them the Gestaltian view of structured wholes.

Thus experience not only "rolls up," but each added experience produces a new configuration of mental processes and a new structure in human actions.

Vygotski had contact with Bergson's philosophy. But even if he had not had this contact, Bergson's philosophy was only one of those very dynamic forms of thinking in which Continental-European philosophy abounded. The Heraclitean-Hegelian way of thinking was a common heritage of continental Europe. The strongest channels which transmitted to Vygotski this way of thinking were, besides Bergson, Dilthey's "Geisteswissenschaft," the Hegelianism of Russian nineteenth century materialists, Marxistic dialectics, and Leninistic action spirit. Vygotski and Piaget were both students of philosophy and based their thinking on the common foundation of European philosophy.

Now Zaporozhets is not a philosopher. Neither have Luriya, Leontiev, or other Soviet psychologists given an indication that they study philosophy. It was the thinking of Vygotski that acted like a catalyst and transmitted the philosophical heritage into Soviet psychology. But, of course, there was also the influence of Marxist dogmas transmitting the dialectic outlook. Also, Russian thinking has never been mechanicistic. The few attempts at mechanicistic psychology, like Lomonosov's and Bekhterev's, remained abortive. Thus Vygotski's philosophical outlook found a receptive ground in Soviet

psychologists' attitudes. And there was only one way to translate a dialectical outlook into psychological terms: a genetic, that is, developmental psychology.

Zaporozhets had also numerous occasions to come into direct contact with Piaget's ideas and with Piaget personally.

The interesting story of Vygotski's unilateral argument with Piaget is a known fact. Vygotski's critique of Piaget's standpoints reveals Vygotski's great interest for Piaget, already at the time when Piaget's name was little known in psychology. Vygotski's interest in Piaget infected the rest of his group to the extent that Zaporozhets began his research with a replication of Piaget's experiments. As Vygotski had expressed critical opinions against Piaget, this rejection of the "bourgeois perversion" produced also an official sanction to the interest.

But Piaget himself, who had no knowledge of Russian language, or interest for Soviet psychology, discovered only twenty years later that such a critique against him existed. He became very much interested (Zaporozhets, 1964a, p. 196) and even visited Moscow (Voprosy Psikhologii, 1955, 3). Piaget had met Zaporozhets already before that, in Montreal, (Zaporozhets, 1955b) and has since met him at many International Conferences of Psychology (1960b). Referring to foreign psychological literature Zaporozhets always gives a special place to Piaget (1964a; 1964b).

Should one speak of a direct influence by Piaget on Zaporozhets? Zaporozhets claims that Piaget followed Soviet research (1964a, p. 197). Perhaps it is not so much a case of influence, as of an affinity in thinking which will strike a resonance, like two identically tuned strings will echo.

Of course, there are also many differences between Piaget's and Zaporozhets' ideas. In general one might argue that Piaget's approach to development is subtler and deeper, and the Soviet approach is bolder and more comprehensive. Piaget analyzes child development in a painstaking way and arrives at an infinity of substages and subphases. But then he freezes them into immutable age characteristics. For explaining the transition from one structurally fixed stage to another one, he needs a cumbersome machinery of decalages, disequilibriums, and so on (1951). Zaporozhets never discovers more than three or four stages in the evolvement of a particular mental process, but he never loses sight of the continuous flow of development. Piaget's picture of development is a series of "stills," like a filmstrip prepared with great precision and expertise, but Zaporozhets' description is like a "movie," hazy in spots, but moving all the time. Piaget is interested in having "stills" at hand, because his purpose is a logical analysis. But Zaporozhets is interested in applied psychology and in the way of how to accelerate

the flow of development.

Piaget readily admits that social factors are very important in mental development (1927a; 1927b; 1959). But for the purposes of research Piaget, to continue the simile, "cuts out" the image of the child of the "group picture" of society. He gives a minute account of each encounter of the child with the objective world, but he omits to consider the influence of an adult's instruction, nor does he use the Vygotskian viewpoint of an "experience of mankind" laid into objects. Zaporozhets explores the child's encounters with objects in a rather sporadic way, taking only samples here-and-there, but he does not lose the view of the child's total interrelations with human environment.

Sometimes it is Piaget who has a more comprehensive view of development. For Zaporozhets mental development becomes visible at the age of three and he flagrantly neglects earlier development. But Piaget not only gives a minute analysis of the development during the first three years, but extrapolates development even beyond birth. He states that "even hereditary properties may be supposed to have formed under the influence of the environment" (1956b, p. 31). But on the other hand, when Piaget reaches the ages of fourteen and fifteen in his studies, he finds what he wanted--the beginnings of logical thinking, and stops being a psychologist. When

Piaget discusses the mind of an adolescent he does it as a real logician (1956).

The subject of the most intense critique of Piaget by Soviet psychologists has been his term "egocentrism." For Piaget it was a most obvious term to choose in order to make himself understood by the reader. "Everybody has always said that the child is egocentric" (1927a, p. 98). This common term Piaget used not to describe the child's moral attitudes, but the forms of a child's logical thinking (1927b, p. 46). Later he found a parallel to this in the child's perception (1956a). In both cases for Piaget the term meant an inability to view objects from any other viewpoint but the one directly given. But for the Soviet psychologists the word "social" contains a value judgment and therefore the term "egocentric" was emotionally confuted with a rejection of social attitudes. Zaporozhets, though he respects Piaget, has repeatedly made caustic remarks about the "pseudo-scientific bourgeois concept of the egocentricity of the child" (1961, p. 21; 1948a) and how such concept "grossly contradicts reality." When Vygotski started his argument against Piaget's concept "egocentrism," he did it not on moral, but on logical grounds (Vygotski, 1956, Chapter II). But it was Vygotski's remark which Zaporozhets repeats, that the egocentrism which Piaget found may depend on the social environment: children in the "Maison des Petits"

received no encouragement for group activities (Ibid, p. 108), and had no chance to develop multiple viewpoints. Zaporozhets adds an idealized concept of society to this statement, saying that in the Soviet Union children have even no examples of egocentricity to imitate (1948a, p. 39). Actually Piaget (1956a) takes the influence of society more into consideration than Zaporozhets, not assuming that the child's social attitude is given from the beginning, but stating that the child needs a correction of his viewpoints by other people.

But it is only in writings on educational topics where Zaporozhets exclaims against Piaget (1948a; 1961). In the calmer atmosphere of a psychological article he is able to agree that Soviet psychologists had misunderstood Piaget's meaning, and that the logical interpretation of the term "egocentric" is quite acceptable to Soviet thought psychologists (1964a, p. 196).

Though Piaget and Zaporozhets both are interested in perception, their approach to it is quite different. Piaget's study of perception is much more technical and specialized than Zaporozhets'. Though both speak about the role of activity in perception, Piaget does not mean by action a muscular activity or coping with a whole situation, but an active form of centration (Piaget 1961, p. 451; Zaporozhets, 1960b; 1962a).

Concerning the role of language in development

both Piaget and Zaporozhets have changed their position. Piaget started out by giving too much attention to verbal expressions of the child (1926), but finished by saying that "verbal thinking seems to me to be marginal to real thinking before the age of twelve" (Laurendeau, 1962, p. XII), and stressing that manipulative activities are a more important basis of children's thinking than verbal statements. This corresponds to Zaporozhets' initial viewpoint. But in between Zaporozhets had to go through a Pavlovian transformation and to give an exaggerated role the "second signal system," not even having a chance to generalize this system to all symbolic signs in a later Piagetian sense, but insisting that language is the whole basis of thinking. But now Zaporozhets has returned to his former standpoints and he is in full agreement with Piaget, that the child's activity is the primary factor in the development of thinking (1964a). Still, both Zaporozhets and Piaget acknowledge the role of language as a codifier (or, according to Piaget, "signifier") (Flavel, 1963, p. 155) of concepts.

There are many terms which Zaporozhets and Piaget use in a different sense. For example, "operation" for Zaporozhets means a complex activity which involves the subject's relation to the situation and muscular activity (1960a, p. 98). But for Piaget "operation" is present only there where all manipulative activity ceases and only

thinking "operates."

There are many other differences. But all these differences are not cardinal. Essentially the psychological system which Zaporozhets represents is the same as Piaget's. Thus it is possible for a bourgeois individualist and a Marxist psychologist to arrive at the same viewpoints.

There is another reason for the similarity besides the common philosophical foundation: it is the plain fact that both Piaget and Zaporozhets love children. Both approach children directly, without a preconceived idea of how a child must act or what psychological formula the child's behaviour must exemplify. They watch the child, enjoying all the funny errors the child makes, not thinking the worse of the child. Both have a very optimistic view of the child's chances to improve and to develop. Each has a weak spot of over-optimism: Zaporozhets, when he views the little child as a high-minded, selfless member of society, and Piaget, when he views a teenager as a perfect logician. But otherwise both Zaporozhets and Piaget approach the growing child with a completely open mind, and try to catch all the rich detail of human behaviour with all its peculiarities. Such an approach can be given only one name: humanistic.

CONCLUSION

In conclusion we can ask what has the analysis of Zaporozhets' works revealed?

First of all it has given a picture of a typical Soviet psychologist of the post-revolutionary period. Not of an original or unique psychologist, but of a representative one. Originality is not a goal of most Soviet psychologists. On the contrary, Soviet psychologists are inspired by the belief that psychology has already achieved a level of exact science, that its principles have been exhaustively defined by Marxist psychologists and its research methods sufficiently clarified. Consequently, a psychologist is not expected to produce startingly novel ideas, but to elaborate and exemplify the already defined psychological principles, and to produce not contradictory, but complementary research results. Zaporozhets provides a typical example of such an attitude. When in his studies he quotes other Soviet psychologists who have conducted similar research before him, this for him does not diminish, but enhances the value of his own work. A particular study thus becomes a part of a huge research project conducted by a whole community of psychologists. Also when Zaporozhets states a theory he does not present it as his own, but very reverently states it to be a theory of Vygotski to which successive Soviet psychologists

have added only some elaboration and clarification. It appears that the time when Vygotski worked at the Moscow University constituted an intensely creative moment in Soviet psychology. And the inspiration of that period has had a lasting effect on those Soviet psychologists who in some way took part in that flash of creativity. Zaporozhets became then and remained since a wholehearted Vygotskian.

The period which followed the demise of Vygotski seems to have been a time of a general togetherness among Soviet psychologists. This was due both to the common creative efforts of the preceding period and to the severe political oppression of that time. Probably it was due to that spirit of togetherness that in the 1940's Zaporozhets was not only a Vygotskian, but also an enthusiastic Uznadzian. Very soon Zaporozhets parted ways with Uznadzian thinking, but never with Vygotskian ideas.

The analysis of Zaporozhets' work has revealed also the significant fact that the team spirit and theoretical unity of the first Marxist psychologists is in no way to be identified with the compulsory uniformity imposed on them during the period of 1936-1953. The former was based on theoretical assumptions and philosophical considerations, involved psychological erudition, and was the result of enthusiastic attempts to create a set of valid psychological principles. But the uniformity

which ensued later was restrictive and extraneous to the thinking of Marxist psychologists. The imposed uniformity resulted in a clash of principles, and one can assume that those Soviet psychologists who had not been Pavlovian before needed a serious effort to reconcile the clashing ideas. It is acutely ironical that Soviet psychologists who sincerely believed that their psychological principles were a faithful interpretation of the dialectical-materialistic philosophy had to adjust their thinking to the ideas of Pavlov, who was openly anti-communist and opposed to psychology. A possible explanation of this paradox seems to be that Stalin's totalitarianism was not communistic, but nationalistic in nature. Probably Pavlov's theory was given an important position, because Pavlov was an original Russian scientist, whereas the psychological ideas held by the early Soviet psychologists were shared also by one or another foreign psychological school. Another possible explanation of the paradox could be that the Stalinistic Marxists, as Lenin had predicted (1961c, p. 180), had reached a stage where "none of the Marxists understood Marxism." The subtle dialectic philosophy underlying Marxist theory had seemingly become incomprehensible to Stalinists. One might assume that such statements of Pavlov's as, "the soul, as a natural principle, is not only unnecessary . . ., but even injurious" (Pavlov 1966, p. 75) had more direct appeal to Stalinists than Engels' involved

theorizing on the negation of negation, on the transformation of quantitative differences into qualitative differences, and so on. The dialectic-materialistic viewpoint is that matter is primary and mind a secondary manifestation of the material reality, but mental phenomena are qualitatively completely different from material phenomena. It seems that in the period between 1936 and 1953 only the first part of this viewpoint was acknowledged and the right of a psychologist to study different phenomena than a physiologist does was denied. To study verbal expressions besides muscular reactions seems to have been the utmost limit to which psychological study was expected to go.

Between the lines of Zaporozhets' writings one can discover signs of a human drama which has not been experienced by Western psychologists. Neither the overwhelming enthusiasm of a revolution, nor the dark doom of an authoritarian power has been within ken of North-American psychologists. Many Western-European psychologists have had a taste of both. But even they have not had the experience of being oppressed by the same political power which they had fervently helped to build up.

It is on the background of this human drama that the importance of Zaporozhets' work can be understood.

However low in the official view was the standing of psychology, however strong was the pressure to direct psychologists into strictly physiological work, Zaporozhets persisted to apply psychological viewpoints to his work. Under the guise of Pavlovianism Zaporozhets stayed true to the principles of a dialectic developmental psychology. In such conditions personal originality was irrelevant, and a faithful preservation of old principles was important. Together with many other Soviet psychologists Zaporozhets preserved psychology as an independent science in the Soviet Union. As soon as the "thaw" arrived these psychologists formed a nucleus around which younger psychologists could gather. The nucleus was responsible for the speed with which Soviet psychology revived and branched out into new fields after 1953. It is true that in the 1960's new trends of Soviet psychology have appeared which eventually may bypass Vygotskian psychology and turn it into a part of the history of Soviet psychology. But it is also true that without the old cadre of Vygotskian psychologists such new developments would have been delayed for a long time.

The drama had a happy ending, Soviet psychologists have regained their professional independence. Zaporozhets is now working in the field which seems closest to his interests, the developmental shaping of Kindergarten children. As already mentioned, it is difficult on the

basis of writings to make conclusions about the personality of an author. But one may assume that Zaporozhets' position as a director of a large research institute requires a considerable organizational talent and a gift for social relations. There are two personal glimpses of Zaporozhets in his publications. One is the dedication of the reprint of his doctoral thesis which reads, "To my mother, Yelena Grigorievna Zaporozhets, with a feeling of love and deep gratitude" (1960a). The other is a photo of Zaporozhets holding very affectionately a little girl on his arm, seemingly a child of Central-Asian extraction. (Doshkol'noye Vospitaniye, 1966-1). Such glimpses suggest a person for whom human beings are not reducible to abstractions or to mathematically expressed norms, but are individuals in whom he is personally involved. One tends to assume that perhaps the most significant characteristic of Zaporozhets' psychological work is his deep personal interest in young children and his understanding of children resulting from such a personal approach. The reprint of Zaporozhets' doctoral thesis is illustrated by numerous photos of children in experimental situations. Some of these photos contribute little to illustrating experimental results, but give a vivid picture of children's attitude to a given task. For example there is a photo of a little girl standing with her head inclined towards one shoulder

and looking doubtfully at the mark to which she is asked to jump. Bringing out such an individual detail can be due only to an interest in the uniqueness of a living human being, in the rich detail of human behaviour. Zaporozhets studies the child as an individual whole, and at the same time as an entity engulfed in the flux of constant development.

While Zaporozhets is a developmental psychologist, he would not be classified as such by every definition of developmental psychology. There is a restrictive concept of a developmental psychologist according to which his task should be to compose exact tables which would show at which age, in years and months, a child will develop certain abilities and behavioral reactions. For example, the Gesell institute has attempted such a task. No such precision in determining developmental periods is found in Zaporozhets' work. There are at least four main reasons why Western psychologists must not expect to find Soviet psychologists tying abilities too strictly to certain ages.

First, the echo of the 1936 decree has not died down yet. From the standpoint of this decree connecting abilities to exact ages would mean setting up norms of development. This in turn, would lead to the discovery of retarded and overachieving children. The statement of such inequality in ability was forbidden by the decree,

all children were assumed to be equal in their disposition to learn, given the appropriate opportunity. In recent Soviet psychology individual differences are admitted. But till the present time no tests involving age norms are used in the Soviet Union. A need for some kind of testing has been felt recently and new diagnostic methods are proposed (see page 89), but age norms are not mentioned in such proposals. It is desired to diagnose a stage in the continuous stream of development a child has reached and not his relative position among age peers. Due to the ban on intelligence testing in the past, present Soviet psychologists are spared the disillusionment with IQ-tests which Western psychologists are experiencing at present.

The second reason for avoiding precise age norms is the Soviet three-factor theory of development. Of the three factors, hereditary disposition, social environment, and education, the last is considered as a very important one. To consider the mental maturation of the child in isolation from educational influences is regarded as a figment by Soviet psychologists. Moreover, Soviet views have at all times been optimistic as to the power of education. At the time of the 1936 decree a child's failure at school was attributed solely to poor instruction (Bauer, 1962, p. 4). Though views are not so extreme at present, faith in education is still implicit in the Soviet Union, and development is expected to depend not

so much on age as on the educational situation. "Though the developmental phases depend in a definite way on the number of years the child has lived and on the maturation level of his body, they need not coincide with the child's chronological age or the level of his physical maturity," states Zaporozhets (1964b, p. 678). The knowledge of developmental periods, "the qualitatively different steps in the formation of the child's personality" (Ibid.) is regarded as very important both for the psychologist and the educationist. But the time each period lasts is considered as not so vital as the qualitative characteristics of each stage, the different ways in which a child attacks a task, his different attitudes and ways of perception, his "leading activity" at each phase, and so on (Ibid.) Knowing the sequence of such phases the educator approaches the child not from the standpoint whether the child has lived up to his age standard or not, but from the standpoint at which phase of development the child has arrived. Being acquainted with the characteristics of this phase the educator can adapt his teaching methods to the type of the child's mental activity. He will know also into which next phase he is going to lead the child and how then to change his methods correspondingly.

Avoiding exact age norms Soviet psychologists have less need to deal with the problem of cultural bias than those psychologists who insist on a precise definition of

age characteristics. Data for tabulating age norms are usually collected from a limited cultural environment, therefore a cultural bias is unavoidable. To represent such data as reflecting an independent maturation process, uninfluenced by the cultural environment, is deceptive. For example, when the Gesell Institute discovers that a six year old child can count by tens and fives, knows and counts pennies, writes figures to twenty, adds in the limits of ten, and so on (A. Gesell, F. L. Ilg. The Child from Five to Ten, Harper, 1946, p. 400), this represents the exact curriculum of Grade I of a North-American school, and there is no chance to find out in the studied environment what the child's arithmetical prowess would be without the influence of the school or of the curriculum-conscious parents. Still less plausible it is to represent as a maturational phenomenon the finding that a three year old child says "I like," and a three and a half year old child says "I love" (Ibid., p. 319). In no other European language does a verb corresponding to the English "like" exist, instead a circumscribing phrase is used. Children begin to use this phrase much later than at three years, and they use "love" till quite late childhood. To avoid such findings which apply only to a limited topographical area and to children with a certain type of parents, Soviet psychologists characterize developmental phases not so much

by the knowledges and skills a child possesses, but by his attitudes, his methods of cognition, his leading interests, and the type of relations a child has with the adults and children of his environment.

The third reason why each Soviet psychologist does not feel obliged to give a complete description of particular age periods is that Soviet psychological research constitutes a teamwork. The research of each Soviet psychologist is presumed to contribute to a common stock of knowledge about the human being. Thus we find that Zaporozhets does not state the characteristics of the phases of the child's total development, but only of the phases in the child's mastery of a particular task Zaporozhets has studied. Implied in such an approach is seemingly the view that till research by many psychologists has covered more extensively all aspects of child development the reporting of concrete research findings is more important than premature generalizations. Wherever possible the Soviet psychologists pool their knowledge. The manuals on preschool child psychology edited by Zaporozhets in recent years are the collective work of many psychologists, each in his special field contributing his share to the total mosaic of research on child psychology.

The fourth and most overtly stated reason for avoiding strict age norms in Soviet psychology is the dialectic viewpoint. The dialectic concept of development

serves as a model for Soviet child psychologists, it constitutes for them the basic theory of child development. Each Soviet child psychologist conducts a series of experiments to study the development of some particular abilities or activities of the child. The pattern into which the obtained data are fitted is not merely a list of the child's chronological ages, but a wide concept of human development, and even the wider concept of development as a basic principle of existence. Soviet psychologists are not so much interested in the question which empirically observed characteristics of the child coincide at a certain age, as in the question which principles of development these data illustrate. The ideal of a Soviet psychologist is to obtain as few and as simple principles as possible. In search of these he has recourse to the dialectic philosophy.

The two main principles of dialectic philosophy, universal mutual interdependence and constant change and motion being the result of internal contradictions, are also the main principles of the dialectic psychology. "The subject of the research in child psychology is a complex dynamic system of interdependent processes and phenomena. The particular psychological processes do not develop in isolation, but as traits of an undivided

personality of the child who possesses certain natural dispositions, and who lives, acts, and is educated in certain social conditions" (Zaporozhets, 1964b, p. 671). In this brief statement Zaporozhets touches on the main areas in which Soviet psychologists see the principle of mutual interdependence expressed in the child's development. All traits of a developing child, all his abilities, attitudes, all particular psychological processes are considered to be in constant interaction. The result of such interaction is an undivided and unique personality. Unique it is because in each case there is a different combination of traits interacting.

The physiological and mental development are also seen in interaction. "On one hand, for the appearance of a certain function, a certain maturation level of the nervous system is needed. On the other hand the functioning itself has an influence on the maturation of corresponding structural elements. The maturation of the child's nervous system in itself does not result in any new mental developments, but it creates new possibilities for an organization of the child's activities and for acquiring experience, thus forming a premise for mental development" (Zaporozhets, 1964b, p. 676). Soviet psychologists study typological differences of the nervous system, but their standpoint is that the typological differences, too, constitute only "innate dispositions, organic premises on

the basis of which human abilities develop. They determine neither the character, nor the developmental level of these abilities, because the latter can develop only through the assimilation by the individual of the society." (*Ibid*., p. 676).

The last part of the above statement constitutes the core tenet of Vygotski's cultural theory of development. According to this theory the influence of the cultural environment is not seen as a force affecting a passive individual, nor as an adaptation process on a biological model, but as a dynamic interaction between individuals and an absorption of ideas stored by the society in its cultural products. By the Vygotskian theory, which Zaporozhets wholeheartedly adopts, there are three kinds of experience. Two of these are characteristic of animals: "the experience of species (which is transmitted to successive generations through hereditarily fixed morphological characteristics of the nervous system), and individual experience, acquired by the individual by way of adaptation to life conditions. In the development of the child, besides these two experiences, a third, quite special kind of experience appears and acquires a dominant role. This is social experience embodied in the material and spiritual products of social creativity" (Zaporozhets, 1964b, p. 675). Acquiring of this social experience is a genuine give-and-take. "During the child's development an

active and increasingly complex interaction takes place between the child and the adults of his environment" (Ibid.). This interaction may range from the child's actively imitating the example of an adult in handling a tool (which in itself may represent a many thousands year old experience of mankind) to the deliberate explanation by an adult and conscious appreciation by the child of society's products of cultural creativity. Organized education stands at the top of the ladder of the numerous factors of development. But education does not consist of the child's passive receptivity, but of his active participation. Thus education, like other factors of development, does not affect the child from outside, but consists of a process within the child. "The moving causes of child development are not outside of, but within this process" (Ibid.). However, this dynamic process within the child is brought about in interaction with a great variety of factors. Considering the multiplicity and complexity of these factors, and according a predominant role to social-cultural factors which may vary to a great extent, a Soviet psychologist regards as unrealistic the setting up of over-precise age norms, especially as to the content of knowledges and the list of skills a child possesses at each age period. Zaporozhets considers defining age periods as "an important and insufficiently treated problem

of child psychology," but in his view "the developmental phases need not coincide with the child's chronological age" (Zaporozhets, 1964b, p. 678). Moreover Zaporozhets considers the amount of acquired information not so characteristic of the child's developmental level as his relations to his environment (Ibid.).

The other main dialectic principle, that of motion and change being the essence of existence, likewise, does not permit too strict age norms. "The development is continuous and it is difficult to establish a clear borderline between one phase and the next" (Ibid., p. 678). The view of dialectic philosophy that the moving cause of the process of change are internal contradictions necessitates the definition of qualitatively different developmental stages. At each period the child has different ways of attacking tasks, a different extent of relying on the help of adults, different interests, preferred activities, and so on. But all the time the child is active, and each activity increases his abilities and skills. At the same time he grows and his physical power increases. "One of the basic contradictions in child development is the discrepancy between the child's increased physical and mental capabilities on the one hand, and previously formed relations with the people of his environment, and previously developed forms of activity on the other hand.

To resolve these contradictions new relations of the child with his environment have to be established and new forms of activities have to be found, thus enabling a transition to a new level of mental development" (Zaporozhets, 1964b, p. 678).

Zaporozhets, like other Soviet child psychologists, is interested in developmental periods. But for him they do not represent an automatic process of maturation tied to chronological age, but result from a combination of numerous factors, thus permitting "considerable individual variations" (Ibid.). In order to allow for such variations the description of the developmental process has to be in general terms. "In the process of changing from a helpless infant to an independent adult, to a valuable member of the society, the child's mind develops, his reflection of the objective reality becomes increasingly complex and close to reality" (Zaporozhets, 1964b, p. 671). In this statement Zaporozhets summarizes in a simplified way the salient features of the child's development. The three main goals towards which the child's development leads are considered to be an adequate reflection of reality by cognitive powers, an independence of the child from the help by adults, and the "assimilation of ethical norms and ideals of the people of his environment" (Zaporozhets, 1964c, p. 803) to the extent that the child can act according to these norms.

In studying the child's cognitive abilities

Zaporozhets has observed the development from a chaotic perception of the objective environment, relying mainly on the tactile sense, manipulation, activity and a random orienting reaction, towards an organized perception of reality relying mainly on visual and auditory senses on a systematic orienting activity which leads towards a "standardization of the material and ideational objects with which the child operates" (Zaporozhets, 1964b, p. 677), and on "the help of verbal descriptions and explanations" (Zaporozhets, 1964c, p. 802). Speech gives the child short-cuts towards cognizing the objective world, but only in interaction with concrete exploration of the corresponding objects and phenomena, only when "supported by sufficiently clear images built up as a result of previous observations" (Ibid.). To reinforce the development from random exploration to systematic cognition and to verbal short-cuts "a special organization of the children's orienting activity has a basic role in educational guidance" (Zaporozhets, 1964b, p. 677). The development of cognition moves also from an acquaintance with the objects of the child's immediate surroundings to the building up of a system of ideas about the basic natural and social phenomena" (Zaporozhets, 1964c, p. 803). The cognitive development is characterized also by an acquisition of "forms of logical and discursive reasoning" and by "an awakening of cognitive interests" (Ibid.). Emotional changes take

place at the same time, and "ethical, esthetical, and intellectual experiences appear together with the development of cognitive processes of the child" (Ibid.).

The development of the child towards greater independence and towards the assimilation of ethical norms are seen by Zaporozhets as parallel developments. The child's increasing independence serves as a premise for his acting as a responsible member of society. "A transition takes place from an activity carried out together with adults and with their direct help to an activity accomplished independently by the child following the directions and the guidance of adults. At the same time the first simple duties are set up" (Ibid., p. 802). At a higher level of maturity the child internalizes the directions completely and acts without any guidance. Zaporozhets considers the study of "the communication of the child with other people and the effect of this communication on the mental development of the child" (1964b, p. 677) as very important.

For the preschool age Zaporozhets considers play as the leading activity and as a means for preparing the child for independence. Re-enacting the activities of adults in play "the child gets a chance to understand and feel the environment in a deeper way" (Zaporozhets, 1964c, p. 802). "Aiding the cognition of the environment and developing the child's imagination, play also has an important role

in training the child's will" (Ibid., p. 803). The term "will" designates both a level of independence and a capability of acting in a responsible way, "a skill for subordinating one's actions to certain instructions and also to one's own projects and plans" (Ibid.). Zaporozhets regards the play as a valuable, but not sufficient means of training the will. Already at the preschool age some simple work activities have to be introduced. The child's sharing the work activities of the family is valuable. The kindergarten gives a still better opportunity for this, because it provides systematic child-adjusted instruction and it constitutes a community of children. To be able to act in the interest of other members of a community signifies a high level in the development of the child.

The training of cognitive abilities, the development of esthetical and ethical concepts and the training of the will create premises for the formation of the personality of the child. The end of the preschool period is the time when the child's personality begins to take shape "with the appearance of new needs and interests, and with the development of definite character traits. . . . Children begin to be guided not only by personal wishes, but also by the interests of adults and by the demands of a group of peers. A striving appears for more serious, socially meaningful activities. In such a way psychological readiness is created for a transition from play to learning,

from the preschool age to the early school-age" (Zaporozhets, 1964c, p. 803).

Thus we see that for Zaporozhets child development is inseparable from educational influences and goals, and also that the sequence of the forms a mental activity takes is for him more important than encoding the research data under exact chronological ages. Development is fluid for him. Zaporozhets is a developmental psychologist not because he sets up norms of development, but because he regards every psychological phenomenon as exemplifying a process of development.

Finally, one could ask the question, is Soviet psychology a phenomenon completely isolated from Western psychology, or is it an integral part of the latter? It is true that there was a period when Soviet psychologists had by decree to work in isolation from any non-Soviet research and to treat anything stated by Western psychologists as opposed to Soviet views. But a complete isolation never came about, though at some periods ideas travelled only in one direction. At the early phase, of Soviet psychology, at the time when Vygotski was active, Soviet psychologists were well-informed about any type of Western psychological research and were stimulated by Western ideas in many ways. In the same period Western psychologists knew very little of what was going on in

the Soviet Union. Then followed the period when Soviet psychologists were presumed to be completely separated from Western research. But it was just the Soviet psychology of that period, the Pavlovianism, that became best known in the West. Pavlovian concepts were incorporated into Western psychology, especially in North America, and Pavlovianism was assumed to be the only psychological school of the Soviet Union. Now a new period has arrived when both Eastern and Western psychologists are becoming increasingly more informed about each other's work. It would be logical to expect that both sides would enter now into a relation of dialectic interaction in which contradictions would stimulate new ideas. But there is still hesitation on both sides. In Zaporozhets' writings, as well as in those of other Soviet psychologists, Western research is often still described as bourgeois, reactionary and unacceptable for Soviet science. It seems that a period of a free give-and-take between East and West has not arrived yet.

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